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SYMPOSIUM ON THE MANAGEMENT OF MENTAL RETARDATION IN ADOLESCENTS
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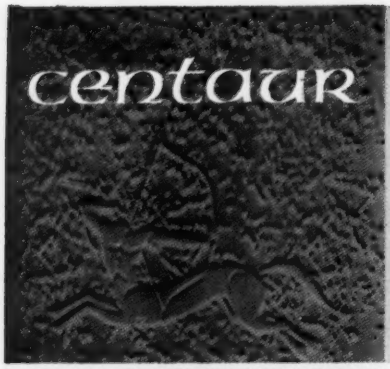

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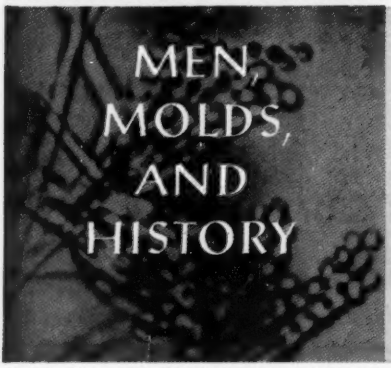

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Symposium on the Management of Mental Retardation in Adolescents
Part II
GUEST EDITOR—I. NEWTON KUGELMASS, M.D., Ph.D., Sc.D.

The Ego Structure of the Adolescent Retardate: Psychological Principles for Clinical Application

Sidney L. Green, M.D.
BROOKLYN, N. Y.

Even under the best of circumstances, adolescence imposes severe strains on whatever sense of inner stability, personal competence, and social self-assurance the child has been able to achieve during all the preceding years since its birth. The adolescent retardate, whose coping, conceptual, and adaptive skills are already limited in comparison with those of his relatively unhandicapped compeers, is faced with even greater difficulties and more chance of failure as he attempts to weather this period of unavoidable psychophysiological stress. It is the purpose of this paper to set forth the principles derived from modern ego psychology that can enable those who work with them to ensure that retardates' experience in adolescence shall basically be one of growth and maturation of personality, particularly in the areas of reality testing, coping skills, wholesome object relations, and ability to postpone impulsive gratification by tolerating ordinary frustrations.

Before proceeding further, it would be well to indicate the group of retardates with whose adolescence this paper is concerned. The considerations that follow will not include those related to the special problems of children whose "retarded" status is largely due directly to severe organic disturbance of the brain because of disease, injury, or birth anomaly. The retardates under discussion here may or may not show evidence of conduct disturbances, neurotic manifestations, or indications of "borderline" or "latent" psychotic states on close scrutiny. However, they do have in common (a) the capacity to establish and maintain (often only with the benefit of assistance from others) a meaningful awareness of the people about them

Part I of this Symposium appeared in the March issue.

and of relating to them and (b) the ability to acquire some skill in reading and writing along with (c) other coping skills, which can make them capable of taking care of their personal grooming and hygiene and, later, of undertaking some kind of employment. As is well known from other studies,[5] the level of employment skills achieved may be relatively high in contrast with limited capacities for abstract conceptualization and limited fund of general information.

I prefer to distinguish, as does Blos,[1] between "pubescence" as the term to denote the physical and physiological changes associated with sexual maturation and "adolescence" as the term to denote the psychological adaptive processes whereby the human being approaching his adult years attempts to deal with the threats to his homeostatic equilibrium that are concurrently presented by his personality problems, his social conflicts, and the inner state of disquieting tension created by the bodily changes and reorganization associated with pubescence.

As already noted, no single characteristic can accurately identify this group of adolescents. In order to provide a more precise delineation, we may say that the group under discussion would include those whose intelligence quotients range between 50 and 70, whose maximum average mental age would range between 8 and 12 years, and whose maximum average social age would range between 10 and 18 years. While such categories suggest certain ego potentials and certain ego handicaps, the details of neither group of ego characteristics are clearly indicated by such classifications. This is the problem with which we are here concerned.

One other problem of identification still remains to be considered. This relates to the importance of distinguishing between the dynamic personality characteristics that should be acquired in the preadolescent phases of development and those that are associated with the adolescent period of life. Age alone is no criterion among the nonretardates, and as might be expected, age is an even less reliable criterion among those classified as retardates. For example, obvious pubescent changes may be recognized among 10-year-old children regardless of their level of intellectual endowment or any other psychological qualities by which they might be evaluated. Exposure to the anxiety created by organismic distress due to the state of physiological imbalance associated with pubescence does not automatically mean the appearance or evocation of psychological dynamisms of an adolescent character. This point has considerable significance for the discussion that follows because the adaptive methods used by the individual to cope with the sociophysiological problems and conflicts of his pubescent and postpubescent years can only be those that he already has developed and has available for use.

Thus, our problem resolves itself into one of recognition of the stresses associated with the pubescent and postpubescent period with which the retardate must contend and the ego assets and liabilities of the retardate at that time. The stresses in the first category have been extensively studied but are deserving of some review here.

The retardate at this point of life may be confronted with the problem similar to that of the oversized toddler whose age-adequate capacities are ignored by his elders and who is exposed to constant pressure to perform and adapt at the more mature level of the older child he physically resembles. So it may be with the pubescent retardate. Except in special institutional environments, his usually age-adequate

physical appearance may lead others to make demands of him that are beyond the capacities of his ego to meet. If he is living in the community at large he perceives the similarity in age, size, and secondary sex characteristics between himself and his nonretarded compeers. He may very well demand and seek to assume all of the privileges he associates with them, such as larger allowances, later hours, independent clothes purchases, automobile operation, emancipation from parental authority, and sexual intercourse. Ideally, the pubescent retardate should have some reasonable degree of awareness of his limitations in the areas of comprehension, conceptualization, and performance. Obviously this would be indicated by his behavior and attitudes rather than by his words.

It is at this juncture that the ego structure of the retardate in his adolescent years becomes so vitally important. It is my thesis that with the payment of proper attention to the ego needs and capacities of retardates, we acquire a tool that should help them reach and get through the stresses of their adolescent years with a degree of adaptational success comparable to that achieved by the nonretardates.

All children are more or less difficult to deal with in their adolescent years. This difficulty may prove to be even more pronounced in the case of the retardate in view of the relatively limited quality and quantity of the ego resources available to him. These would include such ego functions and activities as the synthesizing function, ability to communicate meaningfully with others, capacity for conceptualization, adaptive and coping skills, reality testing, judgment, general fund of information, organized self-image, and some degree of empathic awareness of others. Accordingly, any program or approach designed to help the retarded child get through his adolescent years with a maximum of success must be based on a sound knowledge of the origins and patterns of his ego development. Ideally, such a program should be consistently maintained from birth onward in order to promote the greatest possible degree of integrated ego strength[3] in preparation for the unavoidable crises of the adolescent years.

In 1936 Anna Freud[2] expressed the opinion that "we must grasp the nature of the ego-situation in infancy, before we can explain the disturbances to which the ego is liable at puberty" (page 154). The validity of this observation has been extensively documented since then. It is particularly relevant to the group we are discussing inasmuch as varying degree and kinds of "ego deficit" or "atypical ego development" are regularly encountered among those classified as mental retardates. Their damaged or inadequate egos make inevitable special problems characteristic of their patterns of relationship and development in infancy and childhood. These earlier characteristic attitudes and methods of perception and adaptation thus developed by the retardate contribute greatly to the pattern of his behavior and adaptation in adolescence.

To start with, the dependency needs of the retardate are greater in infancy than those of the nonretarded child. Expressed in ego terms, this means that what has been called the evocative function of the mother must be fulfilled particularly effectively if the anlage of his potentials for effective ego development are to be sufficiently energized by the child so that they will be useful to him as he grows bodily and develops his personality structure. As the child grows, he should be able to

call on his ego's ability to promote its own further growth and development. He accomplishes this by the increasing use of the sense of personal identity, the recognition of the identity and roles played by others, the reliable perception of the nature of his own needs and feelings, the development of conventional methods of interpersonal communication, and the capacity for reality testing.

However, no matter what the infant's inborn ego potentials may be, they cannot be adequately realized without the impetus to their growth and development provided by that totality of experience that we call "mothering." It is not enough that there be adults who fondle, console, feed, dress, clean, and talk to the infant. For those infants who come to be designated as retardates, it is even more necessary than for the nonretardates that they should have the opportunity to be mothered for as long as possible by one particular person. The sense of reality and of personal identity develops in infancy largely in consequence of the recognition of one person as the principal source of comfort and need gratification. This kind of experience alone could result in a selfishly dependent individual. The additional experience of not having the mother-person immediately available every time the feeling of need for her arises is a vital component experience in the evolution of the sense of identity and the capacity for reality testing. Such transient "deprivations" have the cumulative effect of causing the ego to learn to define more sharply what is self and what is not self; to distinguish between total abandonment by the mother and her temporary absence; to become aware of the difference between gross rejection by the mother and her brief, unavoidable unavailability; to understand the difference between real and fancied danger; to learn to tolerate postponement of immediate need gratification without collapse; and to develop an effective awareness of its own initiative and the coping skills available to it. This is a "must" list of the minimal requirements for adequate ego functioning, regardless of the level of intellectual and social comprehension and conceptualization at which a person may ultimately be able to function. These ego achievements are not ensured by the experience of brief maternal deprivations isolated from all other experience. Such experience must be supported by the basic requirements that a particular person be identifiable as the mother-person in its life for at least the first three to four years after the retardate's birth and that her relationship to the retardate during this period be characterized by a combination of warmth, firmness, consistency, and reasonable emotional stability. It is only in the context of such a relationship that the experience of brief episodes of maternal deprivation can lead to the evolution of an ego structure that is well based on reality and a sense of reliable self-identity and that is motivated to ensure its own self-sufficiency within the established structure, standards, and limits of the moral values generally accepted in our society.

It should be evident from the foregoing that the timing of institutional placement must be considered in relation to the young retardate's established sense of self-identity, evidence of capacity for reality testing, and ability to relate to others in a meaningful way when such placement is considered as a means of encouraging further ego development rather than a way to provide no more than protective and custodial care. Under the best of circumstances, it is unlikely that an institutional program can provide the one-to-one mothering experience for the activation of the potentials

for subsequent ego development that is so vital a part of the experience of infancy of all children, but more particularly so in the case of those suspected of falling into the class of retardates.

The experience of mothering must be guided with particular care and understanding for those infants in whom we suspect those ego deficits that justifies their classification as mental retardates. Attention has already been called to their greater need for extended contact with a mother-figure after birth than is the case with infants born free of ego handicaps.

There is one further element that must be considered when setting up a program of adequate maternal care for infants who we believe will fall into the mentally retarded category. This is the factor of innate drive endowment of the child.

Ordinarily, the basic libidinal and aggressive energies available to the individual come to be largely fused with each other and modified in the course of ego growth and development. Both environmental circumstances and innate endowment can interfere with this orderly outcome. Some aspects of the former influences have been referred to in the preceding discussion. The variations that may occur in the latter must be sought for in infants suspected of ego handicaps and proper allowance must be made for these variations when parents are counseled with regard to the needs of such infants. For example, the infant who reacts indiscriminately with great irritability and distress to most stimuli must be dealt with more gingerly, although no less firmly and consistently, than a more stable infant. On the other hand, the extremely quiet or, perhaps, apathetic infant may require a more intensive and extended contact with the mother-person to provide it with stimulation sufficient to energize the emergence of its ego potentials. The failure to recognize these variations and to provide appropriately for infants showing them could result in otherwise avoidable patterns of defective ego integration such as autism, impaired interpersonal relationships, impaired reality testing, incomplete development of capacity for coping, learning, and the exercise of initiative, or uncontrollable aggressiveness. In the presence of such defective integration of ego structure and function, the primitive drive energies continue to be expressed in largely unmodified form long past the time when they should be available to the ego for the development of such functions as healthy curiosity, acquisition of knowledge, sense of personal identity and personal worth, acceptance of personal limitations and awareness of help available from others, ability to communicate in a conventional and meaningful way with others, ability to perceive and respond with warmth to the interest and affection shown by others, and ability to learn to perform useful tasks (within the limits of potential capacities) and assume responsibility for basic social obligations.

All that has been stated thus far relates to laying that foundation in the retardate's ego that will place him in the most advantageous position to withstand the powerful and disturbing impact of the physiological changes of pubescence. Above all else, these changes result in the accumulation of inner tension and anxiety of varying degrees of intensity. The manner in which the retardate will handle these states of tension and anxiety (rarely verbalized) must depend on the already developed ego resources available and the extent to which their use is constructively reinforced by the environment in which the pubescent retardate finds himself. Because of his

slower rate of psychosocial development it is more likely that he will have to handle physiologically determined pubescent stresses before he is at the age when he is significantly engaged in coping with tensions created by the problems of social and sexual identity arising out of typically adolescent interpersonal relationships with his parents and others.

As with nonretardates, these children are alarmed and apprehensive as a result of the experience of inner disharmony and their awareness of changing body structure and function. If his ego resources have been adequately developed, during the preceding years, along the lines already indicated, there need result no prevention of such further ego development as the pubertal retardate may be capable of achieving. To be sure, we may expect some degree of temporary regression as he attempts to come to terms with his distress. However, his behavior need not be associated with serious breaks with reality, uncontrollable outbursts of violent sexual or aggressive behavior, or massive regression into helpless states of apathy or mutism. On the contrary, although we are likely to encounter some degree of heightened irritability and contrariness, he will never be willing to relinquish to any considerable degree the positive, secure, and protective relationships that he has already established with those about him. Because he has a fundamentally positive orientation toward others, he does not see himself as being unduly endangered or maliciously deprived. Therefore, his experimentation with self-assertion or along sexual lines is unlikely to be characterized by the sadism or preoccupation with narcissistic gratification that we encounter in those retardates and nonretardates whose ego integration has not been sufficient to accomplish the modification of the primitive drive energies previously referred to.

It might be well advised to draw attention at this point to the fact that the kind of serious misbehavior we may observe in the adolescent years of life does not necessarily directly reflect the particular unneutralized[4] (unmodified) drive energies that may be responsible for it. Thus, highly irritable and possibly unduly aggressive behavior in this age group may reflect a state of intolerable tension deriving from the ego's inability to cope with the thrust of increased sexual energies associated with the endocrine changes of pubescence. Similarly, preoccupation with sexual behavior may reflect relatively little unneutralized libido and may be primarily an outlet for unneutralized aggressive drive energy. Sexual promiscuity, compulsive masturbation, and other patterns of pathological sex behavior at this period of life may be traced to long-standing frustrations, which had forced the child to play a submissive role in object relationships. As a consequence, such sexual activity very often represents an overwhelming need to assert dominance and control over others and becomes the principal means of expressing such a need. Since under the best of circumstances the adolescent retardate must be already limited in his concepts and in his outlets for expression, it is particularly important to pay special heed to his prepubescent ego development if he is to be spared the fate of lifelong merciless buffeting from raw inner drives and gross social incompetence.

As the pubescent retardate gets older, he is bound to become involved (according to his capacities, personality, and environmental situation) in the psychosocial problems of adolescence. Like his nonretarded and probably younger counterpart

he becomes concerned with role-playing and the further clarification of his sense of personal identity. He, too, will try to emulate others with varying degrees of success. While frustration and uncertainty characterize much of the experience of adolescence, it is likely to be more extensive for the retardate in view of the discrepancy that realistically exists between what he may be trying to emulate and what he can actually achieve. The degree of awareness of this discrepancy and the extent of the difference will depend on many factors, such as the standards of family life, the balance between life goals and already experienced satisfactions, the standards of achievement set by the community (institution, community at large), along with the prepubescent and preadolescent emotional stability attained by the retardate. As with nonretarded adolescents, the reactions to disappointments and frustrations will be largely determined by the prior sense of self-esteem and feeling of social security already present. Thus, the uncertainties engendered by increasing contact with the demands of an adult world geared to the capacities of nonretardates are tempered, for the emotionally healthy adolescent retardate, by his substantial inner conviction of the support provided by the warm and mutually helpful relationships that he has been able to establish and can establish with others, including nonretardates.

An important part of the work of adolescence is the discovery of both our abilities and our limitations. For the retardate, the latter may outweigh the former if he takes up life outside of an institutional setting. However, in the presence of a well-established capacity for reality testing and the ability to sustain and profit from the relationship with stable personalities, the retardate is unlikely to continue indefinitely to strive for goals that are impossible for him. Rather, he will recognize the extent of his own competence and the importance of supplementing his limitations with the additional ego capacities possessed by those he has come to learn to depend on for these purposes.

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American Education of the Adolescent Retardate

Edgar A. Doll, Ph.D.

BELLINGHAM, WASHINGTON, PUBLIC SCHOOLS
BELLINGHAM, WASH.

Mental retardation begins at intelligence quotient 99. Intelligence quotient 100 as a point of reference divides the mentally retarded from the mentally accelerated. The question now becomes one of how retarded a person may be before the degree of retardation takes on special significance.

Ordinarily the low average (or quartile) limit of mental normality is taken to be I Q 90. This is conventional rather than scientific since the Q (quartile deviation) of measurement may be more or less than 10. Also the significance of deviation varies from one test to another, and the scores vary according to the kind of test employed as well as their standardization samples. Therefore, one has to specify the kinds of tests and the units of deviation that are employed for conventional segregation of the mentally retarded on a continuum. Ordinarily, but without general warrant, these units are taken at approximately 10 points so that intelligence quotient 90 to 100 represents the low average range of normality, 80 to 90 is sometimes used for "slow learners," and 70 to 80 is used for marginal dull normals. Below intelligence quotient 70 is an area where deviation scores require clinical interpretation but are loosely considered as mental deficiency. These ranges are conventional for 1916 Stanford Binet scores. They are not clearly established for most other tests.

These are conventional psychometric cut-off scores for intelligence as a continuum. The words "mental" and "psychometric" are usually used here by implication as synonymous with intelligence. Obviously, this is a constricted use of these words, which literally encompass the totality of all psychological operations, including the traditional categories of intellect, feeling, and will (or cognition, affection, and conation). How does it happen that we move so innocently from mental age to intelligence quotient? How does "mental" become "intelligence" merely by the process of arithmetical division of test age by calendar age? We should either say mental age and mental quotient or intelligence age and intelligence quotient, preferably the latter for conceptual precision. And how do we justify translating intelligence quotient scores into descriptive categories (e.g., 80 to 90 = "slow learner") without appropriate validation and definition?

Mental retardation as something more than a cut-off score on an intellectual continuum is widely used for a clinical category of human behavior previously known as mental deficiency. This in turn was previously referred to as feeble-mindedness and before that by various other designations. The technical term today is oligophrenia, and perhaps it would be better to use this term since this would distinguish between clinical mental deficiency and simple psychometric backwardness.

At this point it might be pertinent to quote a passage from an article[2] of some years ago in which it was proposed that the different degrees of mental deficiency, or feeble-mindedness, be considered as independent clinical categories within the whole category of mental deficiency. This passage reads as follows:

The wide-spread use of intelligence tests has produced a marked curtailment of the technique of mental diagnosis. Quite the opposite effect might have been expected, since the results from intelligence tests were originally designed to elaborate the other details of the clinical syllabus. So effective have intelligence tests become that many clinical psychologists are strangers to the intimate details of the traditional clinical syllabus. Time was when the clinical psychologist was expected to evaluate his observations in relation to hereditary background, social and cultural milieu, developmental history, medical history, school history, occupational or industrial history, and all those influences, biological, environmental, and personal, which might shed light on the subject's present status. Similarly, the examination for present status in earlier days included consideration of the subject's social adjustment, personal characteristics, physical development, motor skills, educational attainment, special abilities and disabilities, habits, interests, attitudes, affective reactions, and other wide-spread psychological considerations. In this complete appraisal the measurement of intelligence was only one detail, although usually the most important.

There is a critical need to distinguish between clinical mental deficiency and psychometric retardation. This problem has distressed clinical psychologists for many years but the only apparent solution has been to discard it and simply use the term mental retardation indiscriminately. This means serious confusion in the field of mental deficiency research, in the relation of mental retardation to social welfare, in public school educational management, in vocational rehabilitation, in residential placement, and in other areas. Also publications, addresses, procedures, and even legislation are confused because the variable meanings of mental retardation are not made clear.

Our position in what follows is that clinical mental deficiency is a predictive diagnosis on a clinical basis that anticipates that the individual at maturity will not be able to manage his affairs with ordinary prudence sufficiently to be self-directing without need of guardianship or continuing supervision. On the other hand, the mentally retarded dull "normal" person is presumed to be competent at maturity, to be self-sustaining and self-directed, and to be able to manage his own affairs without need of guardianship. There are, of course, other considerations than developmental intelligence for determining social competence. Therefore, mentally deficient retarded persons are considered to be developmentally deficient in general, whereas mentally retarded dull normal persons are considered to be backward principally in their intellectual status as measured by abstract verbal psychometric devices and their scholastic consequences.

This article addresses itself to these differences in mentally retarded persons and the consequently different kinds of management. The social and educational objectives are different because these people will live their lives with different kinds and degrees of self-sufficiency. Accordingly, we must have one prospect for the mentally deficient retarded and another for the dull normal degrees of mental retardation. We shall consider here only the educational aspects of such differential management with reference to the adolescent years. Let us first consider the mentally deficient retarded adolescent.

It is a common error to think of mental deficiency in terms of a stereotype. The different degrees may be implicitly in mind but not explicitly set forth as categories previously known as idiot, imbecile, and moron, or more recently known as severely retarded, moderately retarded, and marginally retarded. These latter terms, incidentally, are frequently confused because they are used with different meanings for

different degrees of retardation by different people, e.g., custodial, trainable, and educable. While there is implicit awareness regarding the developmental aspect of mental deficiency with age, the generalized concept does not usually take account of these changes. Actually, when the mentally deficient person of any grade or of any clinical type approaches adolescence, the physiological changes concurrent with this approach have ramifications comparable to those of normal people. The hormonal physiology of the mentally deficient person, while perhaps somewhat different in the terms of biochemistry from that of normal people, appears nevertheless to be similar to the normal. A study by Danenhower[1] some years ago indicated that there were no very substantial differences in the onset of physiological puberty for mentally deficient girls as compared with ordinary girls. Likewise, there were no significant differences in menarche for the different degrees of mental deficiency. Periodicity, however, was more irregular in the lower degrees of mental deficiency than in the upper degrees of mental deficiency.

General observations of the social and personal behavior of mentally deficient boys and girls indicate that the romantic inclinations of the adolescent period are comparable to those of other adolescents except that they are rather generally reduced in both intensity and extensity, just as other functions of mentally deficient behavior are reduced. Consequently, as a rule, although adolescent mentally deficient persons are psychosexually alert, they do not have the same degree of vigor or initiative as is common among normal adolescents. On the other hand, the mentally deficient girl tends to be somewhat more receptive than the normal girl, due to the fact that she has poorer judgment, is more suggestible, is usually in greater need of personal attention, and so on, and the mentally deficient boy may be less discreet than the normal boy. What is important here is that for both boys and girls the onset of adolescence produces profound changes among the mentally deficient child and these changes are of considerable importance in their management, both educationally and socially.

Accordingly, it seems desirable for educational management not only to differentiate the mentally deficient child from the mentally dull normal child at the onset of adolescence, but also, for purposes of special education, to place the deficient children in a somewhat more segregated atmosphere than may have been the case or the need before adolescence.

This is accomplished in the Bellingham, Washington, school district by providing a partially segregated unit, which is administratively integrated with an elementary school unit on a school property where a facility for the mentally deficient adolescent is closely correlated with an elementary school program and is under the purview of the principal of the elementary building. This program affords a terminal occupational education curriculum that is designed to prepare these children for supervised employment, either at home or away from home, which shall produce a maximum of self-satisfaction and self-support, as well as keep these children out of trouble because of lack of other suitable preoccupations. A philosophy and outline of this program have already been described.[3, 4] The goals and criteria for this program have also been set forth. What is important here is that instead of carrying these children through the public schools to a sudden and uncoordinated termination, there

is planned a continuation program of two or three years, which has been anticipated by several years of preparatory occupation education. Under these circumstances the adolescent mentally retarded person pursues an educational program that, following earlier elementary school general preparation, is occupationally oriented from approximately 14 to 21 years of age and leads directly into supervised employment. The requirement of supervision is inherent in the assumption of mental deficiency, which by definition implies the need of ultimate guardianship. Of course, within this supervision the individual may have a considerable degree of freedom and may exercise, under favorable circumstances, quite successful initiative and a moderate degree of independence. But this is always marginal and precarious. Consequently, the educational planning assumes total supervision for the long view. Such a program was in operation 40 years ago in Detroit and other cities. Today such programs are being renewed and extended in many places.

Consider, in contrast, the public school education of the dull normal mentally retarded child. It is evident to those in the field of special education that the distinction between mental deficiency and dull normality is not so important prior to adolescence as it is during and after adolescence. In the elementary school years the major difference between these two groups is in the formative anticipations. But by the time of puberty, the mentally deficient retarded are themselves much more clearly conscious of their limitations and conditions and so are their age peers. Consequently, the mentally deficient tend to be somewhat repudiated by their peers due to the gregarious cliquing of adolescents in general. The mentally dull normal, on the other hand, being essentially normal are segregated by their age peers only in terms of the intellectual and scholastic strata of the social classifications of youth by youth as well as by adults. And because for the dull normal mentally retarded the emphasis is on intellectuality rather than on total personality, their residual capabilities in nonacademic directions are recognized and valued by their peers at actual worth. Consequently, the intellectually dull normal retarded are really academically or scholastically retarded rather than mentally retarded. These people do reasonably well on nonverbal or nonscholastic or nonabstract mental tests and on tests of social maturity, personality, and skill. Not only that, they commonly do well in various occupations and in those aptitudes on which the public puts a social premium. But the adolescent's age peers value the total traits of any person more heavily than do parents, the schools, and society generally. With traditional emphasis on scholastic pursuits, the academically handicapped youth is easily thought of as mentally retarded.

With these premises in mind, the superintendent of the Bellingham school district set up a separate program for the dull normal academically retarded.[5] This begins in the junior high school, or seventh grade, when a clear separation is made on a clinical basis between those students who are presumed to be mentally deficient as contrasted with those who are mentally dull normal, according to the best estimates available from total clinical appraisal. The mentally deficient retarded go immediately to the partially segregated unit already described, whereas the dull normal retarded go into a standard junior high school, and at age 16, to senior high school. Here they are on equal footing with their age peers except for their scholastic diffi-

culties. Consequently, the educational program is modified as to curriculum by a significant change in both the content and the method of administration of the scholastic portion of the curriculum versus the nonscholastic portion.

We have experimented here with what might be called a vertical division of curriculum versus a horizontal curriculum. In the vertical curriculum the child is placed in a home room from which he goes to other classes as does any high school student except that his programming is accomplished with reference to his scholastic deficiencies. The home room provides some group and some individual teaching and a study base. In the horizontal program the child is in a core room for a two-hour half day in which all of his scholastic studies are concentrated on a unified basis, both as to content and as to method. During the rest of the day he is in peer group competition with other children in the high school, attending classes like anyone else in such subjects as art, shop, physical education, homemaking, music, and the like.

At 16 years of age these dull normal retarded children are transferred to a standard high school beginning at the tenth grade. Here the horizontal program is developed more systematically. Work experience programs and the inculcation of occupational virtues and habits are now stressed, while field experience in seeking employment becomes a major part of the curriculum. Most importantly, the children retain their identity as normal people, being associated throughout their high school program with their age peers and ultimately receiving a diploma that is not significantly different from that of other students who are presumed to be unlikely to go on to higher education. (This high school offers two diplomas, a general diploma for those who are scholastically capable of higher education and a terminal diploma for those who presumably are not so disposed.)

There are many interesting details and important nuances in this conception, which are applicable to both of these programs. It is not feasible here to go into these more subtle details, but without them it is possible to conceive of the above structuring rather too artificially. It is very important to recall that these children are all people and should be dealt with as persons, whether deficient or whether dull normal. Consequently, much of their management is based on the similarities between deficiency and dull normality rather than the contrasting indications. These mentally deficient pupils, like other handicapped persons such as the blind, the deaf, and the crippled, will presumably live their adult lives in more or less close association with normal people and normal society. Consequently, the philosophy of management is geared toward maximum socialization and maximum social usefulness as well as personal happiness and adjustment. Accordingly, there are many additional supporting activities that are necessary in a total program for maximizing social adaptation at maturity. This involves such things as personal grooming, social graces, recreational participation, interpersonal sociability, and so on. These are accomplished through a psychodynamically oriented program of the order of educational therapy or reassurance education.

Hence the program as a whole is geared toward social living rather than toward scholarship. In both groups, candid self-concepts are encouraged through self-appraisal devices. Disabilities are not discounted but are frankly assessed so that

handicapping consequences may be avoided. Assets are also appraised so that they may be effectively capitalized. Successful living under this philosophy requires making the most of one's talents and the least of one's deficits.

Put somewhat differently, we might make a distinction between disability and handicap. A major purpose in the management of the adolescent mentally retarded person is to ensure maximum utilization of his potentials in order to attain optimum self-expression. This implies endeavor to capitalize impairment rather than permit it to interfere with success.

A new day is upon us in recognizing the full potential of the mentally deficient person and of giving optimum advantage to the mentally dull normal person. The distinctions presented herein are useful rather than invidious since they frankly acknowledge a difference that must be reckoned with for the benefit of all. We illustrate with an old adage from the Vineland Training School: "The proper education of [mentally retarded] boys and girls is to teach them what they can learn and will make use of when they become men and women in years." To this is added the principle of "Happiness first; all else follows," which sets the stage for personal adjustment and successful learning. In short, education is for living and a livelihood.

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SYMPOSIUM ON MEDICINE AND WRITING

The Symposium on Medicine and Writing that originally appeared in the International Record of Medicine has been published recently as a Monograph. The articles included in this Monograph are: "The Editing of a Modern Medical Textbook" by Russell L. Cecil; "Plain Talk and Clear Writing" by Morris Fishbein; "The Principles of Bibliographic Citation" by John F. Fulton; "The Art of Communication" by Joseph Garland; "On Writing a History of Medicine" by Douglas Guthrie; and "Minerva and Aesculapius: The Physician as Writer" by Félix Martí-Ibáñez.

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British Education of the Adolescent Retardate

*F. J. Schonell, M.A., Ph.D., D.Lit., F.B.Ps.S.,**
and J. McLeod, B.Sc., Ed.B., A.B.Ps.S.†

UNIVERSITY OF QUEENSLAND
BRISBANE, QUEENSLAND, AUSTRALIA

In *International Record of Medicine*, March, 1959, Beier[2] described mental retardation as being characterized by behavioral immaturity or incompetence from birth or early age. In particular he enumerated such symptoms as below-average intelligence, inadequate adaptive behavior, language and thinking difficulties, perceptual and motor deficiencies, and other unattained biological and social skills. According to this definition, it seems reasonable to assume that diagnosis would be completed during the primary school stage and that the main problem at the adolescent level should be simply one of providing appropriate education and training. However, as will be seen later, the boundary between mental normality and subnormality—and even the divisions within the subnormal population itself—have been rendered less rigid as a result of recent thinking and research. It follows that diagnosis in this field must therefore be continuous and cumulative.

In all highly developed communities, the mentally retarded child is recognized as having special educational needs. Provision varies between countries and seems to reflect to some extent the social philosophy of the particular community. Thus, whereas in the United States "integration," i.e. the education of the retardate within the regular school, is traditionally regarded as desirable, most European countries "segregate," i.e. transfer mental retardates to special schools.

Advocates of the integration of mental retardates within ordinary schools often invoke "democratic" arguments, although at least one Englishman would argue that segregation and equality of educational opportunity are not necessarily incompatible. The special school enables the mental retardate to be educated in a more intellectually homogeneous environment, but against this must be balanced the very real danger of stigma. Evidence of the comparative effectiveness of teaching retardates in special and ordinary classes is somewhat conflicting, and according to Kirk,[6] experimental inquiries have not always been adequately designed. The balance of evidence seems to suggest, however, that retardates in special classes achieve better emotional adjustment than do similar children in ordinary classes,[9] but that their educational progress may lag behind.

While the *form* of educational provision differs from country to country, the bases on which this provision is founded are remarkably similar and are compounded of a blend of theory and experience. Whether the retardate is educated in the ordinary school or in a special school, the tendency is to organize classes in groups that are relatively homogeneous intellectually.

Thus, it has been customary to regard the mental retardate as a person whose

* Vice-Chancellor, University of Queensland.
† Deputy-Director, Remedial Education Centre, University of Queensland.

intelligence quotient falls within the limits of approximately 50 and 75. Experience has shown, however, that mental retardates, as so defined, fall into two major subgroups, according to whether they are likely to be socially dependent or independent in adult life. This is particularly noticeable, and of more immediate concern, in the case of older children, where the range of achievement is more extensive. Doll, for instance, writing of the Bellingham school system,[3] stated that it is feasible to teach slow-learning children in ordinary classes at the elementary level, but at the secondary level, the mentally defective retarded children, who are "congregated" for a terminal program of occupational education, are differentiated from the scholastically marginal retarded children, who are grouped in both junior and senior high schools. Jones,[5] inspector of special education in Toronto, described how there, where the system has developed empirically, retardates are taught in ordinary primary schools but are then transferred to junior vocational schools at the secondary stage. The empirical approach is discernible also in the elaborate system evolved by the Board of Education of the City of New York, whereby those pupils who generally fall within the intelligence quotient range 60 to 75 and who are considered capable of holding jobs after leaving school proceed along Educable Track I, whereas those whose intelligence quotient falls in the 50 to 59 range would be placed on another track, Educable II. Intelligence quotient, however, is not the sole criterion according to which children are placed on the appropriate track, and social maturity is one of the factors that are taken into account in determining each child's program.

There is general recognition too that the adolescent retardate requires a *longer* period of training before he is adequately equipped to join his normal peers in the work situation. In the United Kingdom, for instance, children in special schools continue for 12 months over and above the statutory school-leaving age. Allen and Harnett[1] described how more stress is being placed on occupational training for adolescent retardates in Ohio, and they reported that in New York City a school is being planned for retarded youths up to the age of 21.

The classification of educable mentally retarded children is bounded on the intelligence quotient continuum by "slow learners" on the one hand—children who are failing with school work in spite of their higher intelligence quotient—and the trainable mentally retarded on the other. Recently, particularly in the United Kingdom, the similarities between these groups have been receiving more attention, and there is a tendency for the arbitrary boundary between them to become more permeable than has been the case in the past.

SLOW LEARNERS

In a recent symposium,[4] Karnes described the trend to group slow learners (defined by Dunn as having an intelligence quotient between 75 and 90) in special sections or classes, and it was emphasized that slow learners need courses that deal thoroughly with home management, good work habits, etc. Birch also advocated that the curriculum be designed specifically for the slow learner rather than be simply a modified version of regular courses. This is in line with the sort

of provision that is made for the educable retardate. In recent years, too, P. E. Vernon, professor of educational psychology at the University of London, has by implication questioned the orthodox differentiation by intelligence quotient between these two groups. Vernon[14, 15] has criticized the concept of "failing to work up to capacity," the characteristic of the slow learner, on the grounds that its statistical validity is doubtful and that low measured intelligence is not a major *cause* of educational backwardness. He remarked that psychological assessments are susceptible to error due to test unreliability, and differences in test scores, say in intelligence and reading, particularly so. Thus what may *appear* to be educational retardation relative to intelligence quotient may be simply a reflection of the shortcomings of the measuring instruments. Over and above this statistical objection, however, he questioned the meaningfulness of regarding intelligence quotient as a determinant of educational achievement, turning to the writings of D. O. Hebb, the Canadian neuropsychologist, for support. Hebb[19] differentiated between intelligence A, an innate and unknowable potentiality for mental development, and intelligence B, which is interpreted as the intelligence we observe in everyday life and the development of which is influenced by experience. Thus, Vernon argued, the "intelligence" that is measured by tests and that is a more or less adequate sampling of intelligence B is an end product resulting from the interaction of potentiality and experience. It therefore differs from educational achievement in degree rather than in kind. Stott[17] has analyzed the intelligence quotient variability of children in British schools for educable mental retardates, and his results suggest that a considerable proportion of pupils who are transferred to special schools on the basis of a low intelligence quotient will, at a later date, move back into the intelligence quotient group that is more typical of the regular school. Such findings underline the necessity for continuous diagnosis rather than reliance on a measurement taken at a particular time in a child's history.

TRAINABLE MENTAL RETARDATES

It is becoming increasingly obvious that much more can be done for the severely retarded child than was in the past thought possible. Many such children who at one time would have been regarded as institution cases are now being helped considerably in nonresidential schools and centers. In a recent survey carried out in Brisbane,[12] the overwhelming majority of parents of children who had attended Bowen House Subnormal Centre reported that attendance at the Centre had led to a marked improvement in their children's social behavior, language development, and personal relationships. By meeting others with a similar problem, parents had also been helped to accept the situation, and domestic tension was lessened.

Even with children whose retardation is so pronounced that residential institutional care is necessary, there are signs that much can be done.

In the course of a very comprehensive research project, O'Connor and Tizard, members of a medical research unit in an English institution for mental defectives, demonstrated that, with proper incentives and supervision, many patients could be trained to undertake successfully work that is done commercially by manual workers

in industry.[8] Even imbeciles (intelligence quotient 20 to 50) were trained in simple skills, sometimes achieving better results than did high-grade defectives. Indeed, in an experiment by Clarke and Hermelin,[8] imbeciles were successfully trained to do industrial jobs of considerable complexity, such as using a soldering iron to fix four different colored wires to the correct terminals of an eight-pin television plug and assembling a bicycle pump, adding the screws and washers in their correct order in a sequence of nine operations. O'Connor and Tizard emphasized that emotional handicaps and their social consequences, rather than lack of skill, mitigate against the ability of the feeble-minded person to hold a job successfully. This observation finds confirmation in a follow-up study of ex-pupils from an English school for educationally subnormal children by Matthew.[7] In this inquiry, 68 boys (mean intelligence quotient 68.9, standard deviation 9.5) were assessed for intelligence quotient, level of attainment, home conditions, and emotional stability. Emotional stability was the only variable that showed a significant relationship with subsequent employment success.

O'Connor and Tizard summed up their findings by maintaining that "while disabling in part, [mental deficiency] is not so disabling that training and correct guidance cannot enable the feeble-minded to work in the community and large numbers of imbeciles in sheltered workshops."[8]

IMPLICATIONS FOR EDUCATION

It may well be, with improved methods of training the severely retarded, that the intelligence quotient that is at present regarded as the lower limit of educable mental retardation will be adjusted to a still lower level.

At the same time, more acute diagnosis is tending to reduce the weight previously accorded to measured intelligence as a major determinant of the educational or vocational expectancy of retardates. It is interesting to note, in this context, that the English Ministry of Education defines the educationally subnormal as "pupils who by reason of limited ability *or other conditions* resulting in educational retardation, require some specialized form of education wholly or partly in substitution for the education normally given in ordinary schools"[18] (italics are ours).

Research into educational backwardness at the clinical level has been confined, in the main, to examination of symptoms. In the diagnosis of reading disability, for instance, tests have been constructed that have been concerned with knowledge of phonics, tendency to reverse letters and words, ability to blend sounds and to discriminate between visual patterns.[10, 11]

We have learned a great deal about backwardness in the basic subjects from such diagnostic tools, which have utilized the simplest of apparatus, usually little more than pencil and paper, and there is abundant evidence that remedial educational techniques have proved extremely beneficial to many children. A certain hard core of children, however, remain resistant to remedial teaching, and it may be that, from our present approach, we have begun to reach the limits of advance that may reasonably be expected. Diagnosis must penetrate to a more elementary level; for instance, it is hoped that the development of electro-oculographic apparatus and of

artificial "talking" machines will enable us at the Remedial Education Centre of the University of Queensland to make a more rigorously scientific inquiry into the relationship of visual and auditory perception and discrimination to problems of reading difficulties.

In line with the physiological trend in current psychology, an interesting experiment has recently been described by Smith and Carrigan, of the University of Michigan.[13] Briefly, these workers built up a theoretical model to account for observed symptoms of reading disability. The model was based on the respective actions of acetylcholine and cholinesterase in the transmission of nerve impulses. As a result of their investigations, Smith and Carrigan developed a model in three dimensions: relative dominance of acetylcholine or cholinesterase, concentration level of the two substances, and anxiety. Individual diagnosis was made on the basis of a child's performance on 18 psychological tests, which involved cognitive, perceptual, sensory, and other skills. By matching a child's profile of scores with each of five "type" profiles that emerged from a factorial analysis of a large number of poor readers, appropriate treatment, both pedagogical and medical, was prescribed. Smith and Carrigan emphasized that their study was merely exploratory. However, results that they reported in a number of case studies appear to be extremely encouraging. They concluded that while "diagnosis must be based, for the present, on psychological test behaviour, and on extensive clinical study, in time reading symptoms may be used as evidence that a child needs referral to a physician for the treatment of the cause of reading disability."[13]

SUMMING UP

Educational backwardness has long been recognized as a complex problem requiring attention of a specialist. It has been recognized from experience that the difficulties of children whose intelligence quotient is below 75 or 80 are such that educational treatment is required, geared to their specific needs, whether this treatment is provided in the regular school or in special schools. The high incidence of adverse home backgrounds has emphasized the fact that remedial education requires not simply skilled teaching, but rather a total psychological rehabilitation. Teaching itself is, of course, a vital component in the therapeutic process, and during the last 20 or 30 years, there has been an enormous increase in the provision of appropriately designed material. It has been recognized that the retardate requires concrete example rather than abstract reasoning and reading material that will appeal to his adolescent personality but that is written in language within his limited vocabulary, skill, and powers of comprehension. Diagnostic tests have helped psychologists and teachers to direct their attention to each child's particular weaknesses.

We may now have reached the stage, however, when more sensitive instruments are necessary for a further significant advance. With the help of the physiologists, there seem to be some grounds for hoping that a further major breakthrough is more than a possibility. A good deal of rigorous research into both the diagnostic and therapeutic aspects of educational disability will be a necessary preliminary, research

not confined to the "orthodox" educable mental retardate, but embracing all children who have gross learning deficiencies.

Such a program of research will encounter many problems, particularly in communities where retardates are scattered throughout several schools, but the ultimate reward should more than justify the effort.

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Perspectives of Mental Retardation in Adolescence

Felix P. Heald, M.D., and J. William Oberman, M.D.†*

DIVISION OF ADOLESCENT MEDICINE, CHILDREN'S HOSPITAL OF THE DISTRICT OF COLUMBIA; CLINIC FOR RETARDED CHILDREN, BUREAU OF MATERNAL AND CHILD HEALTH, DISTRICT OF COLUMBIA DEPARTMENT OF PUBLIC HEALTH; AND DEPARTMENT OF PEDIATRICS, GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE WASHINGTON, D. C.

The exact incidence of mental retardation in the adolescent population is difficult to assess, largely because the authorities do not agree on what constitutes mental retardation. Any comprehensive definition must take into account not only the role of innate biological potential, but such factors as cultural background, socioeconomic level, opportunities for education, and the presence or absence of complicating emotional disorders. The most recent and most frequently quoted epidemiological study was conducted in Onondaga County, New York, in 1953[1] and included both those children with an intelligence quotient of less than 75 and those children who showed evidence of academic lag, organic brain disease, or social maladaptation. In this study, the over-all incidence of mental retardation was found to be 3.52 per cent for all age groups under 18 years.

The Onondaga County incidence figures differ in varying degrees from those of the two previous studies, which were roughly comparable[2, 3] (table I). The differences that occur are attributable largely to such variables as the definition of mental retardation, the kinds and number of referring sources, and the time intervals between the studies. Nevertheless, all three studies readily illustrate that the greatest incidence of mental retardation is noted in the adolescent age groups. This is the age when the adolescent is being most critically evaluated by academic standards.[4] It is equally well known that the great majority of these adolescent retardates, having been dismissed from or voluntarily dropping out of school, subsequently disappear into the community. Thereafter they lead useful and productive lives, marry and raise children; further, they become economically secure members of society and come to our attention only if they present problems of social maladjustment. It falls on any "habilitative" program for mentally retarded persons to provide the resources for an over-all educational and vocational evaluation of the retarded adolescent, as well as adequate and encompassing programs of career-planning, job placement, and follow-up guidance and counseling.

Within the past 10 years, the traditional terminology of classification of mentally retarded persons (moron, imbecile, idiot) has been replaced by a more meaningful one: educable (marginally independent, intelligence quotient between 50–55 and 70–75), trainable (semidependent, intelligence quotient between 25–30 and 50–55), and custodial (totally dependent, intelligence quotient less than 25–30).[5] It is

* Division of Adolescent Medicine, Children's Hospital of the District of Columbia, and Department of Pediatrics, Georgetown University School of Medicine.

† Clinic for Retarded Children, Bureau of Maternal and Child Health, District of Columbia Department of Public Health, and Department of Pediatrics, Georgetown University School of Medicine.

generally believed that persons in the first two groups will benefit from a co-ordinated plan directed toward preparing them for life in the community. Somewhat dissimilar methods of approach, as well as modifications of future goals, need to be set up for each of these two individual groups. The magnitude of the problem may be illustrated by noting that of the 5,000,000 estimated retardates in the total population, only 150,000 are institutionalized.[6] The remainder constitute a sizeable group, which sooner or later may become a community responsibility; early, careful planning will minimize the social and economic effect of these handicapped persons on the remainder of the population.

MENTAL RETARDATION IN THE ADOLESCENT AS SEEN IN THE CLINICAL SETTING

This section will focus on the adolescent retardate as the physician would encounter him or her in an outpatient or office setting. The adolescent retardate can be classified into three diagnostic categories. First is the group of children who are recognized early in life to be mentally retarded and who have an associated neurological, physical, or biochemical defect. This group would include children with cerebral palsy, severe brain damage caused by an infectious process such as meningitis, and those with developmental defects. The reason for their continued medical supervision during adolescence would be treatment for handicaps such as epilepsy, neuromuscular defects, or behavioral disorders. It is this group that often raises the question of whether care at home is feasible or whether institutional care is necessary.

The second group of adolescent retardates seen in the clinic are those children whose mental retardation is severe enough so that procedures leading to its identification were performed early in life. In general, members of this group visit the clinic during adolescence not for the medical treatment of physical or neuromuscular disorders, but primarily for treatment of social, educational, or behavioral problems.

The third group consists of the borderline mentally retarded adolescent whose intelligence quotient may vary from 75 to 90. Members of this group have escaped previous detection because they lack physical disorders. Their plight comes to the attention of parents or school authorities because they have increasing difficulty

TABLE I

Mentally Retarded Persons Less Than 18 Years of Age: Rates Per 1000 Population

Age, yr.	England and Wales, 1929[2]	Baltimore, 1936[3]	Onondaga County, N. Y., 1953[1]
Less than 5	1.2	0.7	4.5
5–9	15.5	11.8	39.4
10–14	26.5	43.6	77.6
15–19	10.8	30.2	44.9*

* Rate for the age group 15 to 17.

in achieving even average goals at school. In the early grades at school they somehow are able to keep up with their class. But as schoolwork becomes increasingly difficult during late childhood and early adolescence, their inability to cope with intellectual material becomes more apparent. Closer inquiry into their social and behavioral life uncovers deviations, even though slight, in their development as compared with that of their peers. As our educational process becomes more rigorous, this group will receive increased attention and different handling from the severely mentally defective adolescents in our school systems. This group, in a sense, is less of a challenge, as it is felt that these patients are better able to integrate in a self-supporting fashion into our society.

In the general medical and diagnostic approach to the suspected mentally retarded adolescent, a thorough history is essential for uncovering such evidence as a difficult birth, encephalitis, trauma, or other factors known to produce brain injury. In addition, detailed review of the child's developmental and school history is often suggestive of delayed development. Physical examination, however, may reveal little or no evidence of neurological deficits. Evidence of mild neurological deficits such as poor co-ordination or mild and heretofore-unsuspected extrapyramidal damage is occasionally encountered. Psychological testing should be done by a psychologist familiar with the intricacies of the diagnostic possibilities of mentally retarded adolescents. From this the physician will frequently find a clue as to the etiology of their retardation. For example, the intelligence quotient data might indicate that they would be in the borderline mentally retarded range, while the Rorschach Test and Thematic Apperception Test may give evidence of substantially higher intellectual potential and at the same time indicate a degree of psychological disturbance severe enough to impinge on the intellect. Thus the physician has strong evidence that psychological factors are playing a prominent role in the adolescent's retarded intellect. On the other hand, there may be evidence from the psychological testing that areas of the brain concerned with intellectual functioning have been altered or damaged. In this case, the etiology for retardation is different and therefore requires different management.

An additional laboratory procedure that may be used as an adjunct in the total evaluation is the electroencephalograph. In those adolescents whose history, physical examination, and psychological testing suggest an organic cause for the retarded intellect, an electroencephalograph may be of value.

Once the diagnosis has been made, reorienting the goals of both the patient and the parents is extremely important. The physician must be prepared to spend sufficient time with the parents so that they may understand why their child is slow intellectually and so that this impairment may be managed in a way satisfactory to them as parents, to the family unit, and to the patient. This requires that the physician understand the parents' aims, aspirations, and cultural background. Those parents to whom education is of considerable significance need to discuss with the physician the realistic educational goals that their child is capable of achieving. Too often there is a tendency to have unrealistic ambitions for the retardate. The physician must also keep in mind that many of these parents have varying degrees of guilt as to whether they have been the cause of the child's mental retardation.

If this is suspected, an attempt should be made to help them verbalize their guilt and to relieve their guilt by pointing out the unreality of their feelings.

Interpretation of the evaluation of the patient often requires more time than is usually allotted for a single visit. Furthermore, questions may arise in parents' minds after the initial shock of the diagnosis has subsided, and then the interpretation of areas that are unclear to them can be more readily accomplished on a second visit. In addition, continuing lack of acceptance of the diagnosis may become apparent only on subsequent visits.

ADOLESCENCE AND THE MENTAL RETARDATE

How does adolescence affect the mentally retarded boy or girl? In discussing this aspect of mental retardation in the adolescent, there is little factual evidence on which to base our discussion. There have been no longitudinal studies of personality development in adolescent retardates, and little research has been done on a comparative basis as to whether the emotional development of the mentally retarded child during adolescence differs from the development of the normal adolescent.

The most obvious change that occurs during adolescence is rapid physical growth and sexual maturation. In general, the growth of the mentally retarded adolescent is not different from that of his normal peers, though recent research[7] suggests that there may be some differences in growth rate and ultimate stature. This process of the retardate's growing into adulthood confronts parents, particularly those who have denied the reality of the problem, with new concerns and anxieties. The rapid growth of their child into adolescence more clearly indicates to both parents and the community the discrepancy between the child's retarded intellectual growth and his normal physical growth. Though these children have been different from their peers previously, the differences are now so clearly apparent that problems that had lain dormant, such as social needs, self-sufficiency, the need for institutional care, and the direction of vocational interests, become paramount.

The normal problems of adolescence, such as aggression, sexuality, and group acceptance, take on new and often anxiety-producing meanings.

Aggression. Aggression and its integration into socially acceptable channels are a normal component of every child's development. In adolescence, however, this integration of aggression into acceptable channels is of more concern to parents. The reason for this is simple: The mere size and strength of the adolescent is such that uncontrolled aggression can lead to serious consequences. This is particularly true of the boy, who is naturally more aggressive than the girl. Thus the question that arises in parents with a mentally retarded adolescent is whether aggression will lead to behavior of serious consequences within the family unit or in the community.

Data from the Saenger report[8] indicate that only 7 per cent of the retarded group were characterized as having violent and destructive behavior. Studies by Tulchin,[9] Levy,[10] and Woodward[11] suggest that only a small percentage of retarded adolescents have destructive behavior. Their familiar trait of being followers rather than leaders and their need for close supervision would parallel this observation. It is also clear from the Saenger report that parents do not tolerate aggressive behavior.

Destructive or violent behavior leads to institutional care in 4 out of every 5 cases.[8] Over half of those patients who were considered a nuisance, were noisy, or used objectionable language were institutionalized. Furthermore, 79 per cent of those whose aggression was directed toward either a person or property in the community were sent for institutional care. It is very clear, then, that aggressive behavior in the mental retardate is not tolerated in the family unit.

Sexuality. Sexual maturation in adolescent retardates gives rise to anxieties on the part of the parents as to how these impulses may be handled by their son or daughter. It should be noted that sexual behavior is more directly related to the level of emotional development than to physical development. The fears that parents have for a son are related to exhibitionism or exposure to younger children and to indiscreet masturbation. In regard to the adolescent girl, the anxiety is based on the fear that she will become pregnant because someone will take advantage of her retarded state. Available statistics suggest that the majority of severely mentally retarded adolescents show no interest in the opposite sex. In the Saenger study,[8] whose observations include the early part of adult life, only 4 per cent of the total sample appeared to have ever had any sort of sexual relations. In this study there were only a few isolated cases of retardates who had married. It should be noted also that the group studied were primarily living in the community. On a theoretical basis, it would appear that, as the level of intellectual functioning increases, heterosexual interests would also increase. This observation would have to be strengthened by a study with specific data on this aspect of psychosexual development.

Group Acceptance. Concern about acceptance by a group is one of the more important characteristics of adolescence. Group acceptance is always a problem for the retardates. This increases during adolescence, when the disparity between their intellectual and social interests, as compared with those of normal adolescents, is so striking. Furthermore, the ability of retardates to communicate may be limited to varying degrees. Saenger[8] again supplied data that suggest that the number of retardates who have friends rapidly decreases with the increasing age of the retardate. In general, it is felt that there is a correlation between family attitudes toward encouraging independent behavior and the social development of the retardate. By accepting the retardate for what he is, the family provides a decisive influence in promoting a more socialized adolescent. It is concluded that the more favorable the home environment, the greater is the likelihood of the retardate's having friends. The obvious solution to the group needs of the retarded adolescent is to form groups of their own kind.

INSTITUTIONAL CARE

The question may arise during adolescence as to whether a retarded child should be institutionalized. It is necessary to take into consideration the realities of self-sufficiency, the attitude of the family toward the retardate and their ways of reacting toward him, as well as the behavioral activities of the retarded adolescent toward the family and the community. The relatively successful adjustment of the adolescent retardate at home is directly related to parent devotion and the absence of

major parent-patient conflicts. Saenger's data[8] indicate that severely retarded adolescents who did not present many problems in management were more often kept at home than those who presented difficulties to the parents. In his study, 78 per cent of the group in institutions were there primarily because they had presented problems in management at home.

Saenger also noted that 58 per cent of those in institutions entered during the school years, and an additional 23 per cent immediately before or after the maximum age for school attendance. It appears that the years 17 to 20 represent a time of real crisis for many families; once these critical years are passed, the chance of institutionalization is much less, at least until middle age. Tarjan and co-workers[12] have found that the median age in first admissions was 13.03 years; those adolescents with mental retardation associated with epilepsy or of a familial or "undifferentiated" etiology and with higher intelligence quotients (greater than 50) tended to be institutionalized somewhat later.

If a retarded adolescent has had one outbreak of "acting out" behavior, parents may then raise the question as to whether this may occur again. This may force the physician to evaluate completely the personality of the particular retardate as well as the family attitudes to try to decide whether there is sufficient impulse control to prevent repetition of previous undesirable behavior. These parents, in fact, may be asking the physician to make the decision for institutional care for them, and they are often somewhat relieved when the physician makes such a recommendation.

Reasons for institutionalization frequently given by families have included: pressure from relatives, difficulty in providing adequate supervision, interference with emotional and physical needs of other family members, behavior problems, negative community attitudes, and danger to self or community. Many of these adolescents, because of their increasing inability to cope with what is expected of them by family or community, develop superimposed emotional problems or behavioral disorders ranging from relatively mild adjustment reactions of adolescence to schizophrenic reactions.[13] Farber,[14] in a recent study, suggested that the presence of the retardate within the family may have an adverse effect on the psychological development of the normal siblings. Furthermore, his work suggests that the presence of an older retardate, particularly a male, may have an adverse effect on the marital integration of the parents. Thus, the entire family unit, as well as the retardate, must be considered when the question of institutional care is raised. The last consideration, but not the least, is the quality of institutional care available for the particular retardate in question.

The final decision on institutional care must depend on the individual evaluation of the patient and his psychological development, the family's adjustment to the retardate, the stresses the retardate places on the family unit as well as his siblings, and the kind of institutional care that is available to the retardate.

It is important to note that first admission to an institution during adolescence does not necessarily carry with it a poor prognosis. Thus, Tarjan's group found that nearly 70 per cent of 14- to 17-year-old children institutionalized for the first time had been released within a four-year period to their own family, a foster home, or vocational placement.[12]

EDUCATION

The education of the mentally retarded adolescent requires careful programming. In 1959, 48 of the 50 states had state legislation providing for special classes for the "educable" mentally retarded in the public schools;[15] in 35 states reporting, there were 8712 classes containing 137,637 pupils. In addition, 20 states had mandatory or permissive legislation for setting up classes within the public school system for "trainable" retardates; in 1959, there were 951 such classes with an enrollment of 9506.[16] In 23 of these states, children are permitted to remain in class until they are 21, and nearly all states permit them to remain in class until they are 17. Further, in 28 states the public school system accepts at least part of the responsibility for guiding the mentally retarded adolescent toward or actually placing him in employment.

Educational goals for the mentally handicapped, in broad outline, together with all other life goals, certainly do not differ from those for persons with normal intelligence and include such aims as the achievement of self-realization, the development of proper human relations, the attainment of economic efficiency, and the assumption of civic responsibility.[17] The mentally retarded adolescent should enter a special education program in the secondary schools, probably at about age 13. Fouracre[18] recommended that school instruction should revolve around three major areas: home and family life, interpersonal relationships, and occupational training. Within his ability to understand, the adolescent retardate should be given some understanding of the necessity to promote cooperative living within the home setting, to establish good spiritual, ethical, and moral standards, and to understand some of the social and economic problems of the home, as well as to learn household arts, mechanics, and homemaking. He should have some understanding of his rights as a citizen as well as a knowledge of the community in which he lives, and he should have basic instruction in health, safety, recreation, and consumer education. He should also have some understanding of group living and have as many contacts as possible with nonhandicapped persons.

VOCATIONAL REHABILITATION

With the enactment of Public Law 113, in 1943, mentally retarded persons became eligible for vocational rehabilitation services on the same basis as other disabled persons.[19] The Vocational Rehabilitation Amendments of 1954 added other important facets to the resources of the total program, including money for demonstration projects and research. In 1958, 1250 retardates were estimated to have been rehabilitated under the auspices of this program.

As previously mentioned, educable mentally retarded persons usually do well after leaving school. A 1932 report of the U. S. Department of Labor[19] showed that 94 per cent of 1067 such handicapped persons had been employed at some time after leaving school. These persons do best in service jobs; it has been estimated that 54 per cent of all jobs are of this nature and require abilities within the scope of the mentally handicapped and do not require schooling beyond their abilities.[19] Male retardates are successful as helpers to truck drivers, newsboys, peddlers, general

helpers in stores and markets, messengers, stock and shipping room workers, porters, dishwashers, and elevator operators; women adjust well to work in clothing factories and food-packing industries, as well as domestic service and hotel and restaurant work, and to work as waitresses, laundresses, and beauty parlor helpers. Employers emphasize that their prospective employees do not necessarily need to have specific skills, but do require that they have a good foundation in honesty, cooperation, punctuality, cleanliness, and ability to get along with their fellow employees.

In general, the mentally retarded adolescent has one of the following vocational prospects: A directly placeable group will go immediately from school to a job—special education received in school is sufficient to place them directly from school; a deferred placeable group will need further prevocational and vocational experiences, on-the-job training, and personal adjustment training—this may be provided by the local department of vocational rehabilitation; a sheltered employable group will be capable of partial self-support in a sheltered workshop after preparation beyond school; and a self-care (non-self-supporting) group may partially care for themselves in the home and be able to participate socially, but cannot engage in productive employment even in a sheltered workshop.[18]

It is important to note that sheltered workshops and other vocational rehabilitation services fill a pressing need for guiding the retarded adolescent to a useful life as an adult—a complete cessation of regularly scheduled activities can be extremely demoralizing to both the adolescent and his family.

Many "trainable" adolescents, although needing some degree of supervision throughout their lives, are also capable of working for pay. Saenger,[8] in a follow-up study of more than 300 former pupils of the special education classes for trainable retarded persons in the New York public school system (intelligence quotients roughly between 40 and 50), found that 27 per cent were working for pay and an additional 9 per cent had previously worked for pay. Many were able to earn money by performing household chores outside the home. While most had jobs in a parent's or relative's business, 42 per cent had found work through their own initiative.

RECREATION

Mentally handicapped adolescents have the same need for recreation as normal adolescents. However, handicapped children do need additional aid in carrying out such activities since they usually lack the casual give-and-take attitudes found in neighborhood groups because these have not been part of their early experience.[20] Nevertheless, these adolescents frequently enjoy the same type of activity as do normal adolescents of the same chronological age if direction and presentation of plans are adapted to their abilities and time is given for their adjustment. Social clubs for the retarded teen-ager are increasing rapidly, and are held in community centers, local churches, public schools, and Young Men's Christian Associations. Activities that the group can participate in vary with the abilities of the members—such activities as dancing, group singing, and talent shows need considerable direction by the organizer. Sporting activities are usually better performed on an individual level (bowling, swimming); hopefully, there is a gradual transition to team partici-

pation and possibly team competition—the latter, however, again depends on the general level of ability.

SUMMARY

The greatest incidence of mental retardation occurs during adolescence. The rigorous academic demands of school are a major factor in uncovering the retardation.

The impact of adolescence on the emotional development of the adolescent retardate is poorly understood. Some of the problems of normal adolescence as they affect the retarded adolescent are explored. The educational, vocational, and recreational needs of the adolescent retardate are considered.

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NEW BATH OIL FOR DERMATOSES. Use of warm compresses of water and a water-miscible oil, Sardo (Sardeau, Inc.), relieved inflammation and dryness of the skin in 47 of 50 patients, reports Lubowe (Western Med., Dec., 1960). By use of the nonocclusive film of oil, loss of natural oil was minimized and excessive evaporation of moisture from the skin was prevented, which helped rehydrate the skin in patients with anogenital pruritus, dermatitis venenata, neurodermatitis, and miscellaneous other "dry" dermatoses. The oil preparation is not sticky or greasy and is non-sensitizing and nonirritating.

NEW PREPARATION IN ATRIAL FIBRILLATION. Significantly prolonged therapeutic serum quinidine levels have been attained with a specially compounded quinidine gluconate preparation (Am. J. Cardiol. 6:961, 1960). In a clinical test of this compound in reversion of atrial fibrillation, the arrhythmia was successfully reverted to normal sinus rhythm in all but 1 of 18 patients. In only 1 patient was there evidence of quinidine toxicity requiring termination of therapy without successful reversion.

PAROMOMYCIN FOR AMEBIASIS. Paromomycin (Humatin, Parke, Davis), in a dosage of 20 mg./Kg. daily for five days, was effective in clearing the stools of amebae in 32 patients with chronic intestinal amebiasis (AM&CT 7:486, 1960). No recurrence of organisms was noted in follow-up studies from one month to one year. Side effects were mild, transient diarrhea and abdominal pains.

DEVICE FOR SMALLPOX VACCINATION. A plastic ringlike device with nine tiny points is being used instead of a needle for smallpox vaccinations (AMA News 3:8, Dec. 26, 1960). The vaccine is placed on the points, which are pressed firmly against the skin of the upper arm. The new device causes almost no pain, gives a higher percentage of "takes," is quick, leaves smaller scars, causes few reactions.

PEDIATRIC ANTIDIARRHEAL. A new, nonnarcotic drug for symptomatic treatment of diarrhea in children is thihexinol methylbromide (Entoquel, White); it is also available with

neomycin, for treating bacterial diarrheas. The only side effect occasionally noted was a mild transient flushing of the skin, as a reaction to thihexinol.

NEW TREATMENT FOR INTESTINAL GAS. Use of methyl polysiloxane (40 mg. orally four times daily) for four weeks to three and a half years produced excellent or good results in 151 of 200 patients complaining of flatulence and distention (J.A.M.A. 174:2052, 1960). Previous measures had not relieved symptoms. Substitution of a lactose placebo in 20 patients resulted in renewed complaints within 24 hours in 18 patients.

NEW HEARING AID. A fully transistorized device said to set a record in miniaturization for instruments of its type weighs 1 ounce with mercury battery. It is suggested that women can wear the unit in their hair, while men can fasten it under their tie or in their shirt pocket. A top-mounted microphone substantially reduced clothing noise. Marketed as Envoy by Zenith Radio Corp.

PREOPERATIVE RADIATION IN BRONCHOGENIC TUMORS. Preoperative radiation substantially increases the salvage rate in bronchogenic carcinoma, according to a report to the annual meeting of the Royal College of Physicians and Surgeons of Canada. It was noted that radiation improved the resectability rate, destroyed primary tumors, and controlled mediastinal lymph node involvement in a substantial number of cases. No increase in operative or postoperative complications was noted from the radiation.

DEVICE MEASURES PILOTS' RESPONSES. A tiny electronic "minisensor," about the size of a nickel, is now being used to measure the physical and physiological responses of jet pilots under laboratory conditions, according to a report at the annual meeting of the American Rocket Society. The miniaturized device contains its own broadcast transmitter and, when placed directly on the pilot's chest, records and automatically broadcasts the heartbeat to a remote receiver 50 or more feet away.

ANTICHOLINERGIC. Poldine methylsulfate (Nacton, McNeil) is said to reduce gastric hyperacidity 50 per cent or more by selectively suppressing formation of hydrochloric acid by the parietal cells: the drug also decreases gastrointestinal spasm and hypermotility. A slight dryness of the mouth is the only side effect reported in clinical trials when the drug was used at recommended dosages.

Gynecology and Obstetrics in the Old Testament and the Babylonian Talmud*

Part III

Werner Steinberg, M.D.
LINDEN, N. J.

"Thou shalt treat thy wife with the greatest esteem and thoughtfulness: she rears thy children and delivers thee from sin; she makes thy children go to school and admonishes thee to visit the synagogue; she takes care of thy house with patience and unselfish devotion."
Berakoth 17a

SCRIPTURAL POSTULATE

In part III I am going to discuss a very important aspect of the Jewish religion, the *niddah* or "uncleanness of menstruation." Since to the laywoman (as well as to the rabbis) any blood she discovered on her vulva meant her "period," it was understandable that the talmudists had so much difficulty in differentiating between the various types of female genital bleeding. The rabbis knew very well that there were other causes of vaginal bleeding than menstruation. They realized that a prematurely terminated pregnancy, trauma, or a uterine disorder could bring about bleeding, and because they were barred from investigating its etiology in the woman herself, they had to rely on other means, such as self-examination by the woman, observation of the blood, and chemical tests to make a diagnosis.

Text. The discussion of the subject that takes up the greater part of the *masekhta Niddah* is based on a few Biblical verses: "And if a woman have an issue, and her issue in her flesh be blood, she shall be in her impurity seven days; and whosoever toucheth her shall be unclean until even. . . . And whosoever toucheth her bed shall wash his clothes and bathe himself in water and be unclean until the even. . . . And if any man lie with her, and her impurity be upon him, he shall be unclean seven days. . . . But if she be cleansed of her issue, then she shall number to herself seven days, and after that she will be clean" (Lev. 15:19–28). These few paragraphs have affected the daily life of the average orthodox Jewish family unto this day, and therefore, the Talmud treats the subject so extensively by explaining the minute details and implications of this law.

Rationale. The reasons that must have guided Moses to lay down this precept were twofold: esthetic and sociologic. The fear that the messiness and the malodor emanating from a menstruating woman might alienate some husbands from their wives undoubtedly was contributory to the order of separation of the spouses during that time. But that was not all. Moses was not only a religious leader but a man possessing a lot of common sense though he had no medical training. By segregating husbands from their wives for nearly two weeks of every month, he enhanced the

* This is the third part of a three-part article.

physical desire of both partners to the extent that they celebrated a new "honeymoon" each month (Nid. 31b). To the Jew, coitus became thus an impatiently expected, yet a sacred and respected act. He knew that children were his strength, his pleasure, and his duty to his God and his people.

A common belief in those days was that a woman could conceive only shortly before or shortly after menstruation (Lev. Rab. Par. XIV), which is repeated by the Talmud: "A woman conceives only immediately before her menstrual period, for it is said, 'Behold I was brought forth in iniquity'; but Rabbi Johanan stated: A woman conceives only after her ritual immersion, for it is said, 'And in cleansing did my mother conceive me' " (Nid. 31b). This latter view must have been Moses' calculation, since, as will be shown later, the observance of the laws of *niddah* will bring the first intercourse within a day or so of ovulation, thus making it ideal for fertilization. This held true at least for women with regular 28-day cycles, whereas it worked contrariwise for those with shorter intervals. As I have indicated in a previous publication, "The Law of Moses as a Cause of Sterility," it may actually work as a "contraceptive" if ovulation occurs, for instance, on the eighth day of the cycle.

Definition of Terms. The types of genital bleeding may be conveniently grouped into four categories: menstrual, traumatic, organic, and gestational.

Two terms deserve closer scrutiny to make the following chapters understandable, namely *niddah* and *zabah*. The former is derived from the verb *nadad*, meaning "to flee, to be restless." Thus, *niddah* came to mean "separation or exclusion" and later connoted either the impurity of menstruation or the woman finding herself in such condition. It appears likely that in the old days, women were actually isolated during menstruation, such as has been reported by Faitlowitsch of the Falaschas, which are Abyssinian tribes observing a form of Judaism, living north of Lake Tana (Grunwald). The Talmud reports of the Samaritans, who were regarded as proselytes, that they had special houses for menstruating women, which were also used "to bury miscarriages there" (Nid. 56b). But one may assume that in the ordinary Hebrew homes, there only existed a separation of beds, but not different houses.

The second word *zabah* is derived from the verb *zuv* meaning "to flow"; thus a *zab* is a man having an issue from his sex organ, which in the great majority is caused by gonorrhea. The rare instances of a nongonorrheal urethritis would have to be included, but not the seminal emissions, which are separately mentioned. In case of the female *zabah*, it may best be translated by "afflicted with an issue or discharge." It takes in under one heading any bloody flow ("morbid issue of blood," Gesenius) or any discharge of pus or mucus from the vagina; the noun signifying an issue is *zibah*.

NIDDAH

As soon as the woman had ascertained that she was menstruating she became *tamay* (unclean). As such she was forbidden to enter the temple or to come in contact with any of the ceremonial utensils. She also had to sleep in a different bed than her husband and was forbidden to cohabitate with him. The "separation" even went

so far as to prohibit any physical contact with a menstruant; the spouses were not allowed to eat from the same plate nor to drink from the same glass; when they were alone, he should not try to make love to her, not even with words, in order not to arouse her. They were not to sit on the same sofa nor ride in the same wagon (Code of Jewish Law, Par. 153). This period of uncleanness generally lasted from five to seven days, depending on the duration of menses, and it was followed by a seven-day period of reconvalescence (*taharah*), whereafter the woman had to undergo purification by total immersion. This could take place in either a stream or the sea, or she might go to one of the ritual baths (*mikveh*), which had to be equipped with constantly changing water; here she had to undergo immersion. But even then, she could not be visited by her husband because she became a *tebulah yom* (bathed during the day), "and only when the sun is down (and a new day has begun), she shall be clean" (Lev. 22:7).

Unquestionably, this precept had a profound effect on Jewish family life. First, after complete abstinence for two or more weeks in each month the woman would become more attractive to her husband thus obviating the appearance of the worst enemies of any marriage, habit formation and monotony. Each resumption of love life was eagerly awaited by both partners thus cementing the bond of their affection. Moreover, as Rabbi Hertz pointed out, Jewish women were given protection from uncurbed passion of their spouses and taught to view marital life under the aspect of holiness. It is very probable that Moses, recognizing the importance of temporary continence to the maintenance of marriage, ordained the law as if given by divine providence.

Yet, the penalty for nonobservance was rather severe: *kareth*, extermination, as commanded by Scriptures: "both shall be cut off from among their people" (Lev. 20:18). *Kareth*, which was pronounced only for 36 usually major crimes (Kerit. 2a), was originally a divine punishment consisting of premature death at the age of 50 (Moed Kat. 28a); other offences were punished by "death at the hand of heaven" meaning that such person would be dead at 60. The sages themselves must have judged this punishment too severe for a minor infraction such as intramenstrual coitus, because it was later explained that such sin would be pardoned by the heavenly court, if the people did penitence; the earthly tribunal would sentence them merely to 40 stripes (Mak. 13a and b).

The reason for imposing such discipline can be sought in the fact that these practices were commonplace among the pagan aborigines. Moses wanted to prevent imitation of them at all costs. Superstition may have been a contributory factor bringing about such legislation as documented by the Midrash: "He who has intercourse with a menstruating woman, will beget leprous children" (Lev. Rabba, Par. XV). Yet Preuss was skeptical that superstition was a guiding motive. The sages probably regarded a menstruating woman as messy, thus unesthetic, and therefore, they feared her husband's love might turn against her. If, on the other hand, she seduced him to perform the act, the husband had ground for divorce without having to return her *ketubbah* (financial settlement at a divorce). In case he insisted on coitus in spite of his wife's warning, he was to be flogged (Ket. 72a).

The Roman Emperor Hadrian (A.D. 117–138), whose name is remembered in Jewish

history for his infamous edicts and his fiendish actions, first attempted to hellenize Judea by erecting pagan temples throughout the land. The Jews revolted under Bar Kochba, and after first being successful, they later were ruthlessly exterminated under personal supervision of the emperor. In order to render his revenge on the Jews complete he decreed the suppression of their religious practices. Rabbi Eleazar ben Jose tells us of an order by the Roman government whereby the Jews were not permitted to observe the Sabbath nor to circumcize their sons; on the other hand, they were commanded to have intercourse with their wives during menstruation (Meil. 17a). One can well imagine the demoralizing effect that the edict must have had, for it restrained the Jews from living in accordance with their religious teachings.

ZIBAH

The counterpart to *niddah* is the word *zibah*, which signifies flux in general, issue or discharge. The latter may be bloody, purulent, or mucoid in character. Therefore, it comprises a great number of conditions, such as postpartum lochia; bleeding due to miscarriage, inflammatory conditions, tumors, or trauma; purulent discharge due to gonorrhea; or a mucoid or watery issue caused by a salpingitis, endometritis, cervicitis, or vaginitis. All these conditions fall under the one heading of *zibah*. How then was the woman to differentiate between *niddah* and *zibah*? The former comprised, as mentioned previously, the first 10 to 13 days of the cycle. If bleeding occurred in the second half and was observed on each of three consecutive days, the woman became a *zabah* (Bab. Kam. 24a). She was the only person responsible for the detection of bleeding through self-examination although there were a few exceptions to this rule. "In the case of a deaf, an imbecile, a blind or an insane woman, if other women of sound senses are available they attend to her" (Nid. 13b). That means that the physically or mentally handicapped woman may be checked by a neighbor so as not to commit a sin through error. The very young girl who may be too inexperienced to recognize menstruation is likewise exempted; to her the following rule applies: "It is established that the daughters of Israel before reaching the age of puberty are definitely in a condition of presumptive cleanness and the elder women need not examine them. When they have reached the age of puberty they are definitely in a condition of presumptive uncleanness and elder women must examine them. They must not examine them with their fingers because they might corrupt them (by teaching them unnatural gratification), but they dab them with oil within and wipe it off from without and they are thus self examined" (Nid. 10b). These are the only concessions the Talmud makes in permitting others to perform the examination on women though we will see later that a few others were added as the years went by.

BLEEDING OF THE YOUNG GIRL

The Talmud gives no definite age for the onset of menstruation. It recognizes the occurrence of vaginal bleeding in the newborn infant, which is caused by the sudden disappearance of estrogenic hormone, manufactured by the placenta, from the fetal circulation and may be called a "withdrawal bleeding." The Mishnah rules: "A girl one day old is subject to the uncleanness of menstruation, one who is ten days

old is subject to the uncleanness of *zibah*" (Nid. 43b). This latter reference undoubtedly permits the speculation that the text implies gonorrhea, which is transmissible from an infected mother to her infant either by direct contamination during parturition or by transmission when sleeping in the same bed. In order to give the young girl the possibility to distinguish between nonmenstrual bleeding and her menarche, the Talmud gives her specific instructions: "If a young girl who had not yet attained the age of menstruation observed a discharge, after the first time it suffices for her to reckon her uncleanness from the time she observed it; after the second time also it suffices for her to reckon her uncleanness from the time she observed it, but after the third time she is in the same position as all other women" (Nid. 9b).

DIFFERENT TYPES OF GENITAL BLEEDING

Self-Examination. The women fortunate enough to have regular menstrual periods need not examine themselves. They can predict with sufficient accuracy the onset of their period and thus become automatically unclean on the eve before the onset of menstruation and, therefore, offer no particular problem, unlike the woman whose periods are irregular. These have to check themselves mornings and evenings, and also before intercourse, lest they find any evidence of bleeding that may lead to contamination of their husbands. This scrutiny is performed by means of a "testing rag" (*aid*). This word has an interesting etymology; it is frequently used in the Old Testament and usually signifies a witness or testimony. Its root reappears in the word *idim* (plural), connoting menstruation, (e.g., Isa. 64:5). In Mishnaic Hebrew, the word assumes the meaning of either menses or testing rag. With this cloth, the woman is to wipe her vulva before and after coitus to ascertain whether she has started to menstruate. She is charged by law to perform such checking as often as possible: "Every hand that makes frequent examination is in the case of women praiseworthy, but in the case of men, it ought to be cut off" (Nid. 13a). She must differentiate between blood coming "from the source" (*makor*, uterus, cf. part I) and that due to external causes. If she has irregular bleeding (metrorrhagia), she becomes a *zabah;* as such she also has to wait for the end of bleeding and then delay for another seven "white days." Thereafter, she must bring a sacrifice (which is not required of the *niddah*), undergo immersion, and return to her normal marital life. The sages thus recognized that there was uterine bleeding that was different from normal menstruation, and by designating it with a different name, they directed the woman's attention to the pathological phenomenon. By subjecting her to the law of uncleanness they compelled the woman to seek help from the loathsome flow. It might appear cruel to a modern observer when the talmudists decreed that a man whose wife observed postcoital bleeding on three different occasions was entitled to ask for a divorce (Nid. 66a). She was, however, given the opportunity to get remarried, and only if the same mishap occurred with two other men could she not wed again. If one ponders a moment over this almost inhuman precept, one will understand the reasoning of the rabbis; first, marriage to them meant only one thing, namely propagation of the race, and failing that, it had missed its purpose. Second, there is no doubt that they saw in postcoital bleeding the sign of a serious

disease (such as uterine cancer), and they did not want to burden the husband with a wife who was so gravely ill. It is possible that they suspected postcoital bleeding to be a symptom of a transmissible disease and that therefore they placed it in the same category as gonorrhea (*zibah*).

Another diagnostic means of discerning between menstruation and metrorrhagia was the presence or absence of premenstrual molimina. The Gemara teaches that the normal catamenia are often accompanied by "yawning, sneezing, pain at the pit of the stomach or at the bottom of the bowels, discharge (premenstrual), shivering spell, or any other symptoms" (Nid. 63a). Failing any of these, the bleeding was regarded as irregular and not menstrual. But the rabbis also realized that a sudden uterine hemorrhage might be brought on by a mental shock, such as fright or fear. A Midrashic story is given to illustrate the point: When Queen Esther heard of the cruel edict to destroy all Jews in one day, proclaimed by her husband, King Ahasuerus, she suddenly started to bleed although it was not yet time for her period (Esth. Rab. IV, 4). Explains the Talmud: "Owing to the fright of the angel of death, she experienced a (bloody) discharge" (Nid. 71a).

Traumatic Bleeding. In order to render a woman *niddah* it had to be proved that the blood originated at the "source" and was not due to trauma. However, "if a woman observed some blood that might be due to a wound, even if this occurred during her usual period of menstruation, she is deemed to be clean" (Nid. 16a). The Soncino translation adds parenthetically "due to a wound in her womb," an interpretation that does not appear very likely (Preuss) for it would have been difficult for her to detect a "wound" in the uterus. One usually connects with such a wound (trauma) either a rupture or a perforation and that explanation is not very credible. The most frequent traumatic bleeding occurred, of course, after rupture of the hymen. The sages could never concur as to how many days after defloration the woman remained unclean and, therefore, could not be touched by her husband. The Mishnah ruled "until the wound is healed" (Nid. 64b), but what did that mean? Rab had said, so long as any discharge from the vulva could be observed, to which Rabbi Samuel ben Isaac had replied that that was nonsense; rather, the woman remained impure so long as "spittle is engendered in the mouth" (euphemism for: as long as intercourse was accompanied by bleeding). Rabbi Samuel clarified his statement by saying that the wound could be regarded as not healed if she observed a bloody discharge on standing, but not on sitting, or if she noticed spotting while lying on the ground, but not on cushions and bolsters. Contrariwise, the school of Shammai rendered the opinion that *dam betulim* (see part I), the blood of virginity, did not make her unclean and they permitted intercourse on four subsequent nights (*loc. cit.*).

Other references to trauma in the Mishnah concern, for example, the fitness of a girl to marry a High Priest. Not only was he prohibited to marry a girl who had lost her virginity in the natural manner, but likewise one who had been "wounded by a piece of wood (*mukath etz*)," implying one whose hymen had ruptured as a result of a straddle injury (Yeb. 59a). Besides having been unable to get married to a priest, she also counted as a "nonvirgin," and therefore a prospective husband could divorce her by paying 200 *zuz*, if he found out about it (Ket. 11a).

As mentioned previously, the period of uncleanness of *niddah* and *zibah* differed

only in the sacrifice to which the *zabah* was compelled; later it became customary, after the abolition of animal sacrifices, to regard any uterine bleeding as "menstrual," and thus the procedure of purification became identical. Both the *niddah* and the *zabah* had to wait for seven days after cessation of bleeding, when they had to go to the *mikveh* for immersion (Nid. 67b). The change in teaching within one and the same *masekhta* proves that these books were not compiled within a short period of time, but that the redaction of some, on occasions, took a hundred and more years until they were finally published.

Hematuria. The differentiation between metrorrhagia and hematuria was evidently easier, and therefore, blood issued together with the urinary stream was not considered unclean provided the woman was not menstruating. The Talmud makes a distinction whether she urinated sitting down or standing up. If bleeding was observed in a sitting position she was considered clean; if, however, she urinated standing up, any blood issued was unclean. This discrepancy goes back to the confusion over the anatomical position of bladder and urethra. Evidently, the talmudists believed that any urine passed in a standing position had to return to the "source" (uterus) and bring blood back with it (Nid. 59b). How this was supposed to take place we do not know because, as was previously mentioned, there is a disagreement as to the meaning of the words *lul* and *aliyah* (part I). According to Preuss, there is no Aramaic word for bladder, although the sages must undoubtedly have come across it in their studies of animal organs. The modern Hebrew word for urinary bladder is *shalpuhith* (Kaufman), which in Aramaic connotes either "womb" or "gullet of a bird" (Jastrow). The Greeks must have run into the same difficulty: Soranus, following the teaching of Herophilus, believed that the seminal ducts in women (fallopian tubes) ended in the bladder (Temkin), and even centuries later, the famous Italian anatomist of the Renaissance, Vesalius, wrote: "The neck of the bladder inserts next to the cervix of the uterus, and projects the urine into it" (Preuss). Did he by any chance dissect the cadaver of a woman with a vesicovaginal fistula?

Estrus Bleeding. The female of the lower mammals, in contradistinction to woman, bleeds when she is "in heat," i.e., at the time of her greatest sex urge. Apparently, the sages thought that such also must be true in the human female because they saw in vaginal bleeding a consequence of a strong sexual desire. "A woman once brought some blood before Rabbi Eleazar. . . . Having smelt it he told her, 'This is the blood of lust. . . .' She replied, 'My husband was away on a journey but I felt an intense longing for him' " (Nid. 20b). The Aramaic word for "lust" used in this connection was *himmud*, which in Biblical Hebrew (*hemdah*) connoted "desire, coveting," but without having an exclusively sexual implication, such as in the tenth commandment: "Thou shalt not covet. . . ." (Exod. 20:14). A later reference in *Niddah* speaks of a woman who, in anticipation of her marriage, may start bleeding outside of her menses "because her passions are excited" (66a). It was even alleged that eating onions or garlic or chewing peppers may bring about vaginal bleeding, although the possibility of this being a legend was considered (Nid. 63b).

Metrorrhagia. The Talmud recognized that bleeding could be caused by uterine pathology. A story is told about a woman who complained about postcoital bleed-

ing. To arrive at a diagnosis Rabbi Jehuda sprung a surprise. He had one of his students suddenly startle the woman, whereupon a blood clot fell out of her vagina. This brought about her cure from the bleeding (Nid. 66a). The word that the text usually employs for "blood clot" is *golem;* here a totally different term is used in the same context: *hararah*, which denotes a "thick, round cake" or a "globular pile" (Jastrow) and in conjunction with *dam* came to signify a blood clot. Preuss wanted to infer that this meant a pedunculated uterine fibroid whose pedicle had become necrotic and which then was expelled from the uterus. This appears too far-fetched. Mar Samuel tells of a patient who likewise consulted him for postcoital bleeding and on whom he tried the same feat. "Go and scare her," he said to one of his assistants; the latter did as he was told, but no blood clot dropped out. From this Mar Samuel concluded that the woman was "full of blood which she scatters for which there is no cure" (*loc. cit.*). He evidently believed that a blood clot that fell to the ground and burst into tiny fragments indicated an incurable disease.

GYNECOLOGY IN GENERAL

Gynecological Disease. Outside of bleeding, not much was known about gynecological diseases and their management. Some writers went overboard in their interpretations of certain passages, such as Stern. He viewed the story (later to be mentioned again) where a woman aborted "objects like red hairs" (Nid. 22b) as describing a "dermoid cyst of the ovary which had suppurated and perforated into the vagina." Likewise improbable is the opinion of Preuss, who commented on a quotation of Mar Samuel. The Talmud advocated, as a step in the self-examination of a woman for the presence or absence of menstrual blood, a leaden tube, particularly for those women with short fingers who were unable to reach high enough into the vagina. To avoid trauma to the vaginal walls Samuel suggested "bending the ends of the tube inward" (Nid. 66a). This tube (*shephophereth*) could be likened to a tubular speculum although it is implied that the woman herself used the tube, which should have a piece of material at the end. If blood were on the material, one could assume it came from the uterus; otherwise it originated from the walls of the vagina. Preuss wanted to read into a passage from the Tosefta that there were instances where the woman could be examined by others; if she was unable to reach with her hand into the vagina, so that she had to use some exertion, she was then permitted to call a neighbor and ask her for assistance (Tos. Nid. 8b). It appears to this writer that this goes a little too far. We understand today by a speculum (mirror) an instrument that is used by a physician to inspect the cervix. The leaden tube in the Talmud seems to have been nothing else but a "gauze-carrier," which enabled the woman to insert it deeper for closer scrutiny. It is very unlikely that the neighbor inserted the tube and looked at the cervix, since she was only to help the woman in performing her religious duty but was not a trained physician or midwife. One should, however, remember that the vaginal speculum is one of the oldest gynecological instruments known to man. As Ricci remarked, it was used by the Greeks (*dioptra*, known to Hippocrates and Soranus) as well as the Romans (Aëtius described it in detail), and it is possible that a certain knowledge might have

penetrated to Palestine and Babylonia. It should be taken into account that the redaction of the Talmud extended from around 200 until the death of the last of the Amoraim (speakers or interpreters), Rabina bar Huna, in A.D. 499. This takes in about 300 years, during which time certain changes took place. Thus it is possible that later generations of Hebrew physicians overcame their traditional shyness and started to examine the female genitals.

Gynecological Operations. It can be stated beyond any doubt that a few surgical procedures were performed in antiquity. The lipectomy on Rabbi Eleazar was mentioned in part II. Of course, circumcisions and all variations thereof were in common usage. Amputations, especially of limbs that had become gangrenous because of leprosy, are cited on several occasions. Castrations of men, though forbidden by the talmudists, were known; they were carried out either by removal of the testicles or by squashing them or by cross-section of the vasa deferentia. One operative case is cited that might be of interest to the obstetrician. Abaye reported on an infant born with an imperforate anus. He recommended tearing it "crosswise with a barley grain, but not with a metal instrument which may cause an inflammation" (Shab. 134a). Ablation of the uterus was likewise practiced, although only on animals, and they were known to survive the operation. The reason given for this was to prevent the exportation from Alexandria of cows that might be used abroad for breeding purposes (Bek. 28b). This is the only place where a hysterectomy is mentioned, and then only on cows. There is no record of hysterectomies performed on women. This amply demonstrates that there is not much contained in Talmudic texts that may rightfully be called gynecological surgery. Soranus, on the other hand, definitely described a (vaginal) hysterectomy on a woman. The case he referred to was one of uterine prolapse with subsequent gangrene where the organ had turned black and had to be amputated.

DIFFERENTIATION OF BLOOD

Physical Tests. Even though a woman had examined herself before intercourse on the previous evening and had not found any blood on the testing rag, it sometimes happened that she discovered a blood stain on her nightgown the next morning. How was she to distinguish whether the blood stain had been acquired accidentally or whether it had actually originated in the uterus? The Talmud gives several interesting points of differentiation. "A woman may attribute a bloodstain to any external cause. . . . If for instance she had slain a domestic beast, a wild animal or a bird, . . . or if she killed a louse, she may attribute the blood stain to it" (Nid. 58b). If the blood stain was acquired by such accidental means, the woman was not regarded as unclean. Lice and bedbugs could be recognized by their odor and thus disregarded. Other sources of bleeding were wounds that had healed and opened up again. If the stain was larger than "a split bean," the bleeding was not considered accidental (*loc. cit.*).

Color played an important role in determining whether the flux was to be considered sanguinous, serous, or purulent. Rules the Mishnah: "Five kinds of blood in a woman are unclean: red, black, a color like bright crocus, or like earthy water,

or like diluted wine" (19b). Red, of course, was the color of blood from a wound, and black, like the sediment of ink, apparently applied to blood that had clotted and lain in the vagina, thus turning black due to the influence of the vaginal acid. By a "bright crocus color" the sages probably referred to a light yellow serous discharge, which is often observed pre- or postmenstrually. The "earthy water" evidently signified the muddy discharge that a woman with very slight bleeding sometimes observes. The color of wine mixed with water corresponded to our roseate or pink color. The *Shulhan Arukh* declares all red and black as unclean, suspicious of *niddah;* white, yellow, or green is clean, even if the woman herself feels that the discharge comes from the uterus (Baneth).

Chemical Tests. In order to distinguish a blood stain from that caused by a dye, the Talmud proposes seven "chemical" tests, which interest us more from a historical than from a scientific point of view. The substances listed below were to be applied to the stain one after the other; if the stain faded, its cause must have been blood, thus producing uncleanness. If it did not disappear, it had to be caused by a dye and no immersion was necessary. The seven substances were: *rok taphel*, tasteless saliva, i.e., from a person who had not eaten since the previous evening; *mey gerisin*, the liquid of crushed beans, the grits of beans; *mey raglayim*, urine that had fermented; *nesser*, natron, carbonate of soda, preferably from Alexandria and not from Antipatris (a town northwest of Jerusalem, founded by Herod the Great and named after his father [Jastrow]); *borith*, potash, potassium carbonate, a strong alkali (Rabbi Jehuda [ben Ezekiel], whose chemical knowledge was inferior to his Biblical sagacity, confused *borith* with *ahal*, which was an alkalic, sulfur-containing plant used as soap; the *ahala*, which likewise was brought into the discussion by Rabbi Jehuda, is the well-known drug aloe, which was already used in those days); *kimonia*, cimolian earth (this word was taken from the Greek *Kimolia gey*, earth that came from Kimolos, one of the Cycladic islands in the South Aegean Sea; *kimonia* was described as a white chalky powder, which was a kind of natural soap and was used instead of soap by barbers in Athens [see Aristophanes' *Frogs*] or as medicament by Galen [Jacobitz and Seiler]); *eshlag*, lion's leaf (Soncino), some kind of alkali or mineral used as soap for laundry (of it, Mar Samuel says that he inquired of seamen and they told him that *eshlag* could be found between the cracks of pearls and that it was scraped out with an iron nail [Nid. 62a]).

The procedure followed in testing the stain was outlined by the Gemara: "If one applied the seven substances to a stain in a woman's garment and it did not fade away, one should apply it a second time. If it disappeared then, one's clean things remain clean since the stain must have been one of dye; had it been a blood stain it would have disappeared after the first application" (Nid. 62b).

RECURRENCE OF BLEEDING

Let us suppose that a woman has had a regular period for four days and then stops bleeding only to start again two days later. This counts as a continuation of menstruation and the woman remains *niddah*. In order to recognize such a recurrence, she puts on a clean white nightgown and also changes her bed linen. She then

begins her "seven white days" but checks herself each night for reappearance of bleeding. If she notices such, she has to repeat the whole procedure and start counting again. As mentioned previously, she must visit the *mikveh* after seven "white days" and then becomes available to her husband; as long as she did not immerse her husband could not touch her, even if it took years. Because of this ruling Jewish women became "cancer-conscious," which led them to seek early advice of a physician. Interestingly, the Mishnah did not regard any bleeding that occurred on the day of ovulation as "menstruation" but considered this day an "unsettled period," and thus such bleeding did not cause uncleanness. Only if it recurred thrice did it make the woman a *niddah* (Nid. 64a).

GONORRHEAL DISCHARGE

The Mishnah devotes an entire *masekhta* to the rules governing gonorrhea of the male (the *masekhta Zabim* in the sixth order *Tohoroth*, of which no Gemara has been preserved, either in the Babylonian or in the Palestinian Talmud). On the other hand, gonorrhea of the female is dealt with in the *masekhta Niddah*, since it was considered, as mentioned previously, as only one form of *zibah*. Women observe a vaginal discharge on many occasions, and thus it is understandable that the Talmud does not clearly distinguish between, let us say, the innocuous discharge of a cervicitis and the contagious flow of a specific neisserian infection. A yellow discharge from the vagina, which easily could have been caused by gonorrhea, was thought to be one of the five kinds of blood a woman could discharge, and some of the rabbis considered it unclean, whereas others did not (Nid. 19b). Nowhere is there any clear-cut statement that indicates that a discharge may be transmitted from a woman to a man; the uncleanness that the woman conveyed referred more to esthetic and religious premise than to a hygienic consideration. The same mistake was reiterated by Maimonides, when he stated: "If she suffers a flow of yellowish blood, this is clean" (*Book of Cleanness*, Treatise IV). In this book, Maimonides brought out another interesting fact, to wit: "Slaves convey uncleanness by flux, by menstruation, and by childbearing, as do Israelites. But Gentiles do not convey uncleanness . . . for it is said 'Speak unto the children of Israel' thus it is the children of Israel who convey uncleanness by a flux and not Gentiles" (*loc. cit.*).

BLEEDING DUE TO PREGNANCY

Lochia rubra. According to the Pentateuch, a woman after having delivered a manchild remained *niddah* for seven days and in the blood of purification (*taharah*) for 33 days. But if she bore a maid-child, she was unclean for two weeks and *taharah* for 66 days. In both instances, this had to be followed by immersion (Lev. 12:2–5). There is no explanation why this period of uncleanness was doubled in the case of girls, but, as Katzenelsohn has pointed out, the Jews were not the only ones with such a concept. He cited Hippocrates, who likewise fixed the period of purification as twice as long in the case of girls.

After the 33 or 66 days, the woman had to bring two pigeons or doves to the entrance of the temple and hand them over to the priest, who in turn offered them

before the Lord "to make atonement for her" (Lev. 15:29). This custom has been preserved in a changed form down to this day: when a woman has recovered from her puerperium she goes to the synagogue to give thanks for her safe delivery.

As was indicated in part II, a woman who had been delivered abdominally "did not have to spend the prescribed days of uncleanness nor those of purification" (Nid. 40a), since abdominal delivery did not count as a "valid birth" (it did not open the mouth of the womb, *peter rehem*).

Bleeding After Abortions. The laws concerning *niddah* and *taharah* in abortions are the same as in full-term pregnancies; if one was not sure of the embryo's sex, one had to assume that it was a female and observe two weeks and 66 days, respectively. However, the law applied only to abortions occurring 40 days after the beginning of pregnancy, according to the Talmud: "The period for the formation of an embryo in a woman is forty days" (Bek. 21b). Thus, any conceptus prior to 40 days was not counted as a product of gestation. Although the Talmud does not give any percentage figures for miscarriages, it states: "The majority of pregnant women actually give birth, and only a minority miscarry. And of all who give birth, half bear males and half females" (Bek. 20b). This corresponds to our present concept that from 10 to 15 per cent of all pregnancies end in abortions.

Interesting are the different causes that are said to bring on a miscarriage, one of which was already mentioned in part II: "If men strive together and hurt a woman with a child, so that her fruit depart. . . ." (Exod. 21:22). Here, trauma is given as a factor that may be responsible for abortion. But trauma was responsible in only a minority of cases. The odor of roasted meat was said to make a woman lose her conceptus for it caused in her a longing to partake of it (Ab. V, 5). Another superstition goes back to a passage in Hosea: "Though he be fruitful among his brethren, an east wind shall come, the breath of the Lord coming up from the wilderness, and his spring shall become dry and his fountain shall be dried up" (Hos. 13:15). Therefore, Rab reasoned that the spring is the uterus (*makor*) of a woman; "the fountain shall be dried up" refers to the seed in the woman's womb; thus, a woman bears prematurely when this wind blows. To this Rabbi Johanan added: "Even the seed in a woman's womb putrifies" (Git. 31b). Finally, a tale with a slightly humorous touch is related: "A certain woman entered a house to bake. The dog barked at her whereupon her child in her womb moved (*ithakar*) from its place. Said the householder to her, 'Fear not: his fangs and claws have been extracted.' 'Take your favors and throw them to the blazes (on the thorns),' she retorted, 'the child has already moved' " (Shab. 63b). The Hebrew word is derived from *okar* (part I) meaning "to pluck" or "to root up" and in this context may be translated by "was uprooted" or "was detached." Evidently, the woman meant to imply that being startled by the barking dog caused her to miscarry. However, divine providence was also thought to be a cause of miscarriages, as expressed by the prophet Hosea when he hurled his terrible curse against the people of Ephraim: "Give them, O Lord, whatsoever Thou wilt give; give them a miscarrying womb and dry breasts" (9:14).

Because of the laws of *niddah* it was of immediate and practical importance to the woman to differentiate between bleeding, let us say, from an incomplete abortion

and from a myoma of the uterus. She had to pose herself the question whether a mass that she passed from the vagina was a simple blood clot or an amniotic sac that had filled with blood which later coagulated. Which methods of distinction does the Mishnah suggest? "If a woman aborted a shapeless mass (piece of meat) and she was bleeding with it, she is unclean; if not, she is clean. . . . If a woman aborted something like a mass of membranes, like hair, like earth, or like a mass of red insects, let her put it in water and if it dissolves (into liquid blood) she is unclean, but if it does not she is clean" (Nid. 21a). In the ensuing Gemara, the rabbis discussed these two paragraphs at quite some length. Rabbi Jehuda ruled that, whenever the passage was accompanied by blood, it must have been an abortion since it is impossible for the uterus to open without bleeding. But also, if the woman was in doubt she should assume that she might have been pregnant and act accordingly: "If a woman was in hard labor for two days and on the third she aborted and does not know what she aborted, her case is one of doubtful childbirth and doubtful *zibah*" (Nid. 21b). Rabbi Symmachus wished to solve the problem in a different manner: "If a woman aborted a shapeless object, it must be split, and if there was blood in it the woman is unclean and if there is none in it she is clean."

The other comparisons mentioned by the Mishnah likewise gave the rabbis much difficulty in exegesis. For instance, what was meant by a "mass of membranes" (*kelephoth*)? This term did not appear in Biblical Hebrew but was mentioned in the Mishnaic Aramaic, where it at first connoted the peel or skin of an onion or fruit but later came to indicate the parchment (e.g., of the phylacteries). When some woman asked Rabbi Eleazar about the meaning of this, he explained that he had heard from his father that some women have a "wound" or "sore" internally that may form a crust or scab and, when expelled, may look like a mass of "red membranes." It was supposed to dissolve after having been in water. Similarly nebulous was the sense of the term "red hairs." This had even puzzled Rabbi Eleazar's father, who then asked the sages about it, who in turn inquired from the physicians as to its significance. The physicians explained that there were women with a "wart" or "mole" on the inside (of the vagina) from which hairs were growing, and if these were aborted the expelled object would look like red hairs. This might have been a plausible explanation for a rabbi, but it is hard to see how warts, which usually grow as appendages of the epidermis, could have found their way into the vagina, even warts with hair. Preuss attempted to correlate these bizarre terms with analogues out of the modern medical vocabulary. But it appears ill advised to this writer to try to substitute, for the "red rind," an endometrial cast in a membranous dysmenorrhea, or, for the "red hairs," the fuzzy villi of an early chorion, or to compare the "shapeless mass" with an endometrial polyp or submucous myoma that was expelled from the vagina. These Scriptural idioms have to be seen and judged on their own merits and in the light of contemporary knowledge.

Hydatid Moles. Parenthetically, it might be noted that the Talmud never says a word about hydatid moles. This word comes from the Greek *myle*, meaning handmill, which later under Aristotle and Hippocrates assumed the meaning "malformed embryo" (Jacobitz and Seiler). The term later found entrance into Latin as *mola*, connoting "millstone" or "moonstone" or "moon-calf," as used by Pliny, which

subsequently gave rise to our English word "mole." According to Nürnberger, it is derived from the Persian *molin* (carneous birth). Soranus devoted an entire chapter to the subject and described the condition as some kind of pregnancy, accompanied by amenorrhea, swelling of the breasts, enlargement of the abdomen, and stabbing pains. It later is characterized by a marked wasting of the body and edema (which is different from dropsy), and finally a piece of flesh grows out of the vagina. He concluded: "In most cases the treatment previously recommended has brought about a sudden discharge of a large amount of clotted blood by which the disease has been removed" (Book III, 9). There is not a word about this in the Talmud, a sign that the rabbis had neither time nor opportunity to acquaint themselves with the literature of other contemporary physicians. Not until Maimonides is there any mention of hydatid mole, and then only very cursorily: "The flesh which sometimes forms in the womb of women is one which the woman will bring forth, to which there is no shape." ["Indeed, it is a shapeless lump which had formed from the ovum whose expulsion from the uterus was delayed, and it degenerated (mole), sometimes it contains coagulated blood and fetal parts after an abortion (blood mole) also known as carneous flesh mole, sometimes also turning into a hydatid mole"] (Pirke Moshe).

SEXUAL DEVIATIONS AND PERVERSIONS

Polygamy and Concubinage. Before entering a discussion of these subjects let us first define different (and sometimes seemingly overlapping) terms. By polygamy, we understand the practice of having several legally wedded spouses at one time, whereas concubinage connotes a sexual relationship between man and woman without legal marriage to each other, whereby it is irrelevant whether one of the partners is otherwise married or not. Adultery, however, signifies coitus between a married person and any other than the lawful spouse. Unquestionably, polygamy was commonplace with the Jews in antiquity, notwithstanding the fact that Babylonia, the country of origin of the patriarchs (Abraham came from Ur in southeastern Babylonia not too far from the mouth of the Euphrates in the Persian Gulf, Gen. 11:31), was a monogamous land. Therefore, concubinage among the Babylonians was not permitted except where the rule of monogamy was justifiably lifted, namely, when the wife was barren or suffering from an incurable disease (L. M. Epstein). Thus, sociologically, the Jews originally were polygamous approximately until destruction of the first temple (586 B.C.E.); afterward, polygamy seems to have disappeared (Hertz). Regardless of this, the Bible abounds with reports of men who never had more than one wife, such as Joseph, Aaron, Eleazar, and many of the prophets.

There were many causes for such (to us perhaps repulsive) practice. First, polygamy was in some instances a necessity. There always existed a shortage of men, who were decimated by the ravages of continuous wars. Thus, replenishment of the armies could be maintained only if one man "serviced" several women. In order to be able to do this, he or his family had to possess a certain wealth, for a man was only able to "keep" several women if he could afford to acquire them (because he had to pay a purchase price for some, whereas for others he had to deposit a *ketubbah* [*vide supra*]). Second, he had to be wealthy enough to maintain

and support them in a fashion equal to his own standard of living. The Jews first encountered polygamy in Canaan, to which Abraham immigrated after having left Babylonia; from then on, the Jews kept up this custom. The structure of the Jewish family at that time, like that of surrounding peoples, was of a patriarchal type; the man was the master (*ba'al*), although one would greatly err in assuming that the woman was unable to assert herself. Thus, Sarah never submitted to the whims and actions of her husband, and we are told that she became quite jealous of her competitor, Hagar. It was Sarah who forced Abraham to make his concubine and her son leave the house although he had been legally justified in taking her because of Sarah's sterility.

Whether Hagar literally may be called a concubine is a debatable question. There existed a number of gradations of "co-wives," and it might be appropriate to examine their different names and the roles they played in the household. The "chief wife" was called *gevereth*, an eponym given, for instance, to Sarah (Gen. 16:8). A *gevereth* was also the mistress of the servants, and when Israel became a monarchy, the word changed into *geveerah* meaning "queen" or "queen mother" (I Kings 11:19). In modern Hebrew, it simply means "Mrs." The best known word in the Bible for "wife" was *ishah;* it is found very frequently and is used for one or two wives, as in the case of Leah and Rachel. Because they were both sisters their relationship to their husband was about equal. Not so the *pilegesh* (half-wife, concubine), of whom Solomon had three hundred. Better known examples were Reumah, the concubine of Abraham's brother Nahor, or Timna, who belonged to Eliphaz, the son of Esau, and who bore him Amalek. Whenever there were a larger number of concubines, their master employed a keeper, *saris*, which is usually translated as "chamberlain" (Esther 2:14). In later times, the word *saris* came to mean a castrate (either congenital or surgical), and thus came about the "eunuch," the harem's keeper, who can be traced back to the Babylonian kings.

The next lower grades were the slave-wife (*amah*, handmaid) and slave-girl (*shifhah*, maid-servant), two terms that are not strictly identical but that are used interchangeably. *Amah* often was an expression with which women labeled themselves when they talked either to God (Hannah), a king (Bath-sheba to David), or a master (Ruth to Boaz). But in general, the handmaid was a personal servant of the mistress, and as such she was also available to the sexual caprices of the master of the house. Bilhah, the *amah* of Rachel, is a good example. The *shifhah* was simply a slave in the household, and any member of the family was permitted to have intercourse with her; if children were born to her, they remained slaves. It is beyond the scope of this paper to go into the legal status and the complicated relationships of these extramarital women; suffice it to say that the laws of adultery applied only to the *pilegesh* (with a few exceptions to the rule) but not to the *shifhah* or to the *amah*. Since the original reason for taking in a *pilegesh*, especially in Babylonia, was barrenness of the main wife, the master had to go through divorce proceedings if he wanted to free himself from a concubine. Although her children ranked somewhat lower than those of the matron, they were entitled to inheritance and to adequate support after the divorce of the mother.

There are only a few references to polygamy in the Talmud; one of its main advo-

cators was Rabbah (bar Nahmani), the president of the academy at Pumbeditha, Babylonia, from A.D. 308 to 330. When his colleague, Rabbi Ammi, was questioned by a man whether it be permissible to take a second wife since his present one was sterile, he ruled that the man should divorce his wife first, pay her the *ketubbah*, and then remarry; to this Rabbah replied: "A man may marry wives in addition to his first wife; provided only that he possesses the means to maintain them" (Yeb. 65b). The number was limited to four because of the following motive: according to Talmudic law, a husband in moderate health should cohabitate with his wife at least once a week, on Friday night, and more than four wives would reduce each one's visits to less than one per month (Yeb. 44a). For some unknown reason, the rule setting the maximum at four wives was taken over by Islam, which likewise did not permit a man to marry more than that.

Scopophilia. This term is probably less known than its counterpart in French (voyeurism). It has been described in the Bible on several occasions and more so than its variety, mixoscopia, the love of observing sexual intercourse of others. Being ashamed of one's nakedness was not a property that man possessed originally. Just as children are not self-conscious if they walk around without clothes, so Adam and Eve never noticed that they were naked until after they had eaten of the "tree of knowledge of good and evil." Only then did they become aware of their nudity, and when the Lord called Adam, he answered: "I was afraid, because I was naked" (Gen. 3:10). Explained Rabbi Hiya: "Their eyes were opened to the evil of the world, which they had not known hitherto. Then they knew that they were naked, since they had lost the celestial lustre which had formerly enveloped them, and of which they were now divested" (Zohar).

Voyeurism also drove Ham, the son of Noah, to peep into his father's tent, where he lay uncovered having fallen asleep from overimbibing the harvest of his vineyard. For this, Ham's son Canaan was cursed by Noah: "Cursed be Canaan; a servant of servants shall he be onto his brethren" (Gen. 9:25). Apparently, Noah did not want to curse his own son, and therefore, he cursed his posterity instead. Later, Mosaic law strictly forbade uncovering the nakedness of a female, which meant, as mentioned in part I, "having illicit intercourse," but "to uncover her nakedness" was especially taboo if it referred to a woman with whom marriage was forbidden (Lev. 18:7 *ff.*).

Incest. This expression has, during the course of the years, taken on a suggestion of crime, which primarily did not exist. Its original Latin meaning was merely "unchaste," but it has come to signify prohibited sexual intercourse between blood relatives. For instance, Tacitus used the word in the following context: "*Profana (Iudaeis) omnia quae apud nos sacra, rursum concessa apud illos quae nobis incesta*" ("To the Jews, everything that is sacred to us is profane; on the other hand, that which is allowed to them, is sinful to us."). Contrariwise, the word "endogamy" distinctly lacks the allusion to something criminal. Marcuse stated that endogamy between children of the same parents constituted the primordial marriages among primitive peoples without having the stigma of turpitude. The early history of such peoples as the Egyptians, Phoenicians, Persians, and also the Greeks shows many examples of marriages between brother and sister or father and daughter. One

should remember that King Artaxerxes wedded two of his daughters, and even among the Inkas of Peru, a man had to marry his sister. The Greeks permitted marriages between children of the same father but not of the same mother (Marcuse).

A certain taboo seems to have existed in the laws of almost all peoples against certain consanguineous marriages, and as time went by, more and more such unions were declared as prohibited. L. M. Epstein was able to distinguish five different phases in the development of the Hebrew law of incest. He subdivided these epochs into the pre-Deuteronomic, the Deuteronomic, the Levitic, the Talmudic, and the Rabbinic era. In the pre-Deuteronomic period, the kinship on the maternal side was considered closer than on that of the father. A mother remains one, irrespective of marriage, thus representing the "natural" kinship, while the paternal kinship is "legal." Because of polygamy, the children of one and the same mother were more closely knit together than those of the same father. Therefore, the statement by Abraham to Abimelech: "Sarah is indeed my sister, the daughter of my father, but not the daughter of my mother, and so she became my wife" (Gen. 20:12), becomes understandable inasmuch as marriage of children of the same father was permissible. The thought implied in this sentence was that the marriage would not have been possible if both had had the same mother instead of the same father.

In this connection, the story of Lot and his two daughters deserves to be told. Lot and his family had left the burning cities of Sodom and Gomorrah, and Lot had lost his wife, who, in spite of the warning to the contrary, had looked back and been turned into a salt column; he came to Zoar and settled there with his two daughters in a mountain cave. These caves were natural "wine cellars" because of their coolness, and the inhabitants used to store their wine jugs in them (Hertz). The older daughter complained to her younger sister about her fear of remaining childless, for all marriageable men had perished, and their father was the only male creature left to provide them with offspring. Therefore, the older daughter devised the plan of making their father drink some wine, until he became inebriated, and then she tried to seduce him to fornicate with her. Her plan evidently succeeded, and she was able to persuade her sister to do likewise the following night, with the same result: both girls became pregnant from their own father, and both bore sons in due time (Gen. 19:30–38).

There is no doubt that the story caused the talmudists a great deal of embarrassment and they condemned the action of the girls as evil. However, they ascribed most of the blame to Lot rather than to his daughters, who, according to Talmudic opinion, wanted to ensure the continuation of the race, and therefore availed themselves of the only man at hand. They blamed Lot for not waking up from his stupor, even after his ejaculation, and for not being more careful the second night (Naz. 23a). The Bible itself does not denounce the offspring of the older daughter's son Moab, too much, because later God said to Moses: "Distress not the Moabites, neither contend with them in battle" (Deut. 2:9); besides, the Moabitess Ruth, one of the most beloved female characters of the Scriptures, became the great-grandmother of King David. Apparently, the despondency of the two girls over the utter destruction of their home city put them under a profound mental strain, and the disgrace connected with barrenness played a decisive role in their behavior.

The relationship that Judah had with his daughter-in-law Tamar (cf. part I) was, according to the letter of the law extant at that time, not considered incestual. As L. M. Epstein pointed out, Tamar was not a blood relative of Judah, but the relationship was one of affinity, and as such did not fall under the law of incest in the pre-Deuteronomic period. The only reason that the sages later disapproved of that union was because of the girl's poor reputation. During the Deuteronomic period, the list of prohibited marriages was enlarged by the following: step-mother, sister, half-sister (same father or same mother), and mother-in-law (Deut. 27:20–23).

An exception to this rule was the story of Amnon and Tamar (no connection with the above), which falls under the heading of this section but entails another proscription, which will be taken up in the next section. Both were children of King David; Tamar, a sister of Absalom, was the daughter of Maacah, whereas Amnon's mother was Ahinoam; thus, Amnon was Tamar's half-brother. He fell in love with her, and when he saw that he was unable to see her (for she lived in a separate dwelling place), he feigned illness and asked to have his sister come and nurse him. His wish was fulfilled, and she came to his bedside to bake some of his favorite cakes, whereupon he started to make advances. She refused him with the words: "Nay, my brother, do not force me; for no such thing ought to be done in Israel" (II Sam. 13:12). In rejecting him, she suggested he speak to their father and ask his permission for their marriage to each other. This proposal of Tamar is rather surprising, because she must undoubtedly have known that such a union was forbidden by the law of the Torah. As Hertz commented, however, she must have acted in good faith for she had the understanding that marriage between children of the same father was not considered incestuous. To this the Talmud adds in explanation: "Now, should you imagine that she was the offspring of a legitimate marriage, how could his sister have been granted him in marriage? We must infer therefore, that she was the daughter of a *yefath toar* [captive woman taken as concubine]" (Sanh. 21a).

In the legislation incorporated in Leviticus (chapter 18) a number of other unions became taboo, such as those between grandparents and grandchildren and between aunts and nephews. In the Talmudic era, a few more exceptions were added, so that by the end of that period a considerable number of kin were included in the forbidden unions. It is not the purpose of this paper to develop an exact history of the incest laws; suffice it to say that at the present time, there still exists a divergence between the laws of many countries and states and the Jewish precepts. According to the present Jewish law, a marriage between uncle and niece is allowed; however, that between aunt and nephew is prohibited. According to Marcuse, the penal code in Germany (before 1933) permitted both, but forbade any union between step-children, even if they had neither a common mother nor a common father. Quoting Oliven in our own country: "In all states marriage is prohibited between parent and child, grandparent and grandchild, uncle and niece, aunt and nephew, and between siblings. In 28 states marriage between first cousins is prohibited." It goes without saying that any rabbi marrying a couple in this country has to abide by the state law regardless of the concessions of the Jewish code.

Rape. The earliest mention of rape occurs in the book of Genesis, when we are

told of Dinah, Jacob's only daughter. After her family had moved to Canaan, one day she went outdoors to mingle with the native girls. When Shechem, the son of Hamor, the ruler of the land, saw her, he fell in love with her and wanted to possess her. "And he took her, and lay with her, and humbled her" (Gen. 34:2). The Scriptures go on to report that "his soul did cleave to Dinah," and it is uncertain whether the act should be classified as rape or seduction. The text uses the word *lakah* (to take, to seize), instead of the usual "he went in and lay with her," which connotes an element of force rather than seduction by persuasion, although we are not told whether Dinah offered any resistance or not. The Mosaic law specifies as a prerequisite of rape that the woman must have resisted the ravishment: "If the man find the damsel that is betrothed in the field, and the man take hold of her [this time the Scriptures use the much stronger term *hehezijk*] and lie with her; then the man only that lay with her shall die . . . for he found her in the field; the betrothed damsel cried, and there was none to save her" (Deut. 22:25–27). Naturally, the ravished woman went free, contrary to the law for seduction, where both were put to death. The Talmud did not consider rape of a minor to be a more heinous crime than that committed on an adult; however, the usual penalty of death by stoning was changed into death at the stake if the outrage was committed on a blood relative; thus rape became complicated by incest.

In the Talmudic commentary to the tale of Dinah, one meets a rather noteworthy play on words. In discussing the story, Rabbi Papa said to Abaye: "But intercourse in itself is described as affliction, for it is written 'And he lay with her and humbled (afflicted) her.' He answered: He afflicted her through other forms of intercourse" (Yom. 77b). Rabbi Papa used the word *tashmish* (from the verb *shamash*, to handle, to officiate) for intercourse; this term is usually employed to signify marital (legitimate) copulation. In his answer, Abaye used *bee'ah* (entrance), a term that is only rarely found in the meaning of intercourse. As mentioned in part I, the usual term was *be-ilah*. Abaye apparently wanted to imply that the ravisher afflicted or tormented Dinah with other forms of sexual activity, which took place "at the entrance," either with cunnilingus or clitoridal stimulation.

In this connexion, the horrible story should be told that took place in Gibeah, in the tribe of Benjamin. The Bible tells about a man from the tribe of Levi whose concubine had run away and had gone home to her father. The deserted husband followed her to bring her back, and on his way home, he had to stay overnight in Gibeah. He was unable to find any lodging, but he met a stranger who was returning from working in the field and who offered to take them into his house for the night. When the townspeople heard that a foreigner had come to stay in their midst, they congregated before the house of the host and shouted that he should send the man out so that they "may know him." The host, however, refused but offered instead to send out his daughter and the concubine of the stranger. When the demonstration continued, the Levite himself brought the concubine outside, whereupon a mass rape began. The townspeople ravished the poor concubine all night long until she stumbled, completely exhausted, to the house of her host. Her husband opened the door next morning and found her lying dead, face down, with her hands on the threshold; horrified by this sight he cut her up, limb by limb, into 12 pieces,

and sent a piece to each one of the tribes in order to acquaint them with the despicable deed of the people of Benjamin. Thereupon, the other tribes went to war against Benjamin, and almost wiped out the entire clan (Judg. 19).

In the Talmudic discussion about this ghastly and villainous transgression, a certain humorous element is brought out. In the second verse of chapter 19, when the Bible introduces the concubine, we read: "And his concubine played the harlot against him, and went away from him unto her father's house." Commented Rabbi Jonathan: "The Levite found a fly on her and excused it, he also found a hair on her and did not excuse it. Rabbi Judah explained: He found a fly in his food, and a hair in *loco concubitus;* the fly was merely disgusting, but the hair was dangerous" (Git. 6b). Evidently, it was customary for women to trim the pubic hair, but the concubine had not done so, with the result that the good Levite got entangled in the pubic hair and suffered a cut in the *glans penis*.

The third tale dealing with outrage is the love affair between Amnon and Tamar, which was already touched on in the previous section. Since Amnon did not want to wait for his father's permission to marry Tamar, he simply pulled her into his bed and raped her (*vide supra*). Again, the Scriptures expressed the act of rape by *ya'aneha* (he humbled or afflicted her), a term that is not used in the later Talmudic Aramaic.

According to the judicial interpretation of the majority of our states, rape does not necessarily require either complete or partial penetration; if ejaculation took place *inter crura*, under present law, it still is considered rape. Talmudic law expresses a similar view although it recognizes different terms for the various stages of penetration. The first stage, *ha'ara'ah*, expresses the initial phase of sexual contact, i.e., the apposition of the membrum to the vulva. This is more fully explained by Rabbi Jose ben Abun: "Coitus is only complete, when the penis has penetrated as far as *been hasephiyoth* (between the labia)" (Talm. Yerush. Yeb. VI, 1.). The second stage is expressed by *hakhnasah atarah* (entrance of the *corona glandis*), whereas *bee'ah* or *be-ilah* stands for the complete consummation (Yeb. 55b).

The penalty for outrage depended largely on the social status of the ravished woman. Whereas, as mentioned previously, rape of a married or betrothed woman carried a mandatory death penalty for the man, the same crime committed on a single girl drew a much lighter punishment. "If a man find a damsel that is a virgin, that is not betrothed, and lay hold on her, and lie with her, and they be found; then the man that lay with her shall give unto the damsel's father fifty shekels of silver, and she shall be his wife, because he hath humbled her; he may not put her away all his days" (Deut. 22:28, 29). Did Moses consider that it was a greater punishment if the man had to marry her "for good" without the right of divorce?

Other Perversions. Whereas male homosexuality is mentioned several times in the Old Testament, and its practice forbidden and severely punished, tribady was either unknown, or at least not frequently enough practiced to require legislation. That changed in Talmudic times. Then, a term was coined to express tribady, namely *mesalledeth* or *mesalleleth;* this is derived from the verb *solad* or *solal*, which means "to spring, to jump around" and which later signified "to commit lewdness," either by a woman with her little son (Sanh. 69b) or two women with each other

(Sabb. 65a, Yeb. 76a). This is repeated in the Palestinian Talmud: "If two women commit lechery with each other, they are unfit to marry a priest, according to the school of Shammai; but according to the school of Hillel, they are fit" (Talm. Yer. Git. VIII, 10). Citing a commentary in the Soncino translation, it was believed that their lewdness might destroy their virginity, and a High Priest could marry only a virgin. For the same reason, Mar Samuel's father did not permit his daughters to sleep together for fear they might indulge in immoral acts (Shab. 65a). It is questionable whether insertion of a piece of meat into the vagina of a girl friend (Nid. 42b) could be interpreted as a homosexual act.

The practice of transvestitism is noted in the Bible and condemned by Mosaic law. "A woman shall not wear that which pertaineth unto a man, neither shall a man put on a woman's garment" (Deut. 22:5). Moreover, the Talmud frowns on men removing the hair from either their armpits or their genitals, whereas women were allowed to do so, provided they used a pair of scissors and not a razor (Naz. 58b, 59a).

The role that a sexual perversion commonly named bestiality played in Biblical times is difficult to understand. A clarification of terms might be indicated, for the use of certain words has given rise to much confusion. In some English and German dictionaries sodomy is placed synonymous with bestiality or zoophilia. In other English lexicons, this meaning is given as second choice. One glance at the etymology of this word will show that the perversion practiced in Sodom (at least as we know from the Bible) was *coitus in anum* between men, and for that wickedness, God had decided on the destruction of these cities (Gen. 19). Therefore, the term sodomy should be reserved exclusively for homosexual acts between men, whereas any intimate relationship between a human (man or woman) and an animal should be termed bestiality or zoophilia. The Talmud makes this very clear when it comments on a verse from Deuteronomy: "There shall be no harlot of the daughters of Israel, neither shall there be a *kodesh* (sodomite) of the sons of Israel" (23:18). To this the Talmud adds: "For 'there shall be no sodomite' applies to sodomy with mankind, not to bestiality" (San. 54b).

There are several Pentateuchal references to this perversion. The first reference appears in the second book of Moses: "Whosoever lieth with a beast shall surely be put to death" (Exod. 22:18). It then is mentioned again in Leviticus: "Thou shalt not lie with any beast to defile thyself therewith; neither shall any woman stand before any beast, to lie down thereto; it is a perversion" (Lev. 18:23). Two chapters later, the penalty for this crime is given: "If a woman approach unto any beast, and lie down thereto, thou shalt kill the woman, and the beast: their blood shall be upon them" (Lev. 20:16). Finally, the subject recurs in the fifth book in what Hertz has called "The Solemn Dooms," namely, the 12 offences against God, religion, and society, to wit: "Cursed be that lieth with any manner of beast" (Deut. 27:21). The word used in the text for this act is *tebel*, which literally connoted "spice or mixture" but later took on the meaning of "unnatural act or defilement."

The repetition of the command in three different books of the Pentateuch allows the conclusion that this must have been a widespread practice among the pagan people of Canaan, and therefore, special emphasis was necessary lest the Israelites

adopt such abominations. The Mishnah and later the Gemarah gave the judicial interpretation and implementation. The female had to be 9 years and 1 day old to be liable; below that age, she did not incur any penalty, for it was considered an outrage by the animal, and therefore, it alone was punished (San. 55a). If such a crime came before the Sanhedrin, it was adjudicated by 23 judges, and both the human and the animal were executed by stoning (San. 2a). This type of execution was customary in cases of sex crimes, idolatry, and incest, whereas adultery was punished by burning at the stake. The reason the animal was likewise killed is given in the Mishnah: "That the animal should not pass through the streets, whilst the people say, this is the animal on account of which so and so was stoned" (San. 54a). The Talmud distinguishes two types of zoophilia in the female, which, however, are both liable to the same penalty; first, where she submitted to actual copulation with a male animal, and second, where other acts of bestiality, such as cunnilingus, were committed (San. 55a). The fear of such transgression must have been the reason that Rabbi Joseph recommended that "a widow should not rear dogs" lest she be suspected of an immoral act with them (Ab. Zar. 22b). It goes without saying that any woman who was subjected to unnatural intercourse was disqualified from marrying a priest (Yeb. 59a), to which Rabbi Dimi added a more or less credulous story: "It once happened at Haitalu that while a young woman was sweeping the floor a large hunting dog jumped on her and covered her from the rear, and Rabbi permitted her to marry a priest" (Yeb. 59b). Apparently, it made a difference whether the woman had voluntarily submitted to the act or whether she was ravished by the animal.

CONCLUSION

In the three parts of this paper, the writer has endeavored to fill a gap in the English literature. Although no publication in any language has ever dealt exclusively with the gynecological and obstetrical topics in the Scriptures and their commentaries, monographs dealing with Biblical and Talmudic medicine in general have previously been published (most of these studies were written in German). It is hoped that the painstaking documentation of references will make the work valuable to the medical historian and the student of theology, and the author trusts he has made a small contribution to the cultural aspects of Judaism and medicine as well.

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An Interesting Case of Duodenal Diverticulum, with Straying of *Ascaris lumbricoides* into It

Tatsunori Okamura, M.D., and Tatsuo Maekawa, M.D.
KYUDEN HOSPITAL
FUKUOKA, JAPAN

The duodenal diverticulum was first discovered by Chomel[1] in 1710, incidentally during the postmortem examination, and in 1914 Key first removed a duodenal diverticulum, which had been preoperatively diagnosed through roentgenological examination by Forssell.[2] In Japan, the first case was reported by Wakisaka and Honda[3] in 1930.

Although reports concerning duodenal diverticulum or diverticula are not uncommon today, descriptions of diverticula with some living parasites within them still seem to be unavailable. A case that was diagnosed roentgenologically and cured through surgical intervention by the authors is interesting and noteworthy in showing that *Ascaris lumbricoides* can stray into the diverticulum, causing the acute abdominal symptoms.

CASE REPORT

The patient was a 47-year-old woman. Family history revealed nothing of importance.

Previous History. The patient had had acute appendicitis 22 years previously, which was cured without operation. The climacteric was at 42 years of age.

History of Present Disease. On Nov. 1, 1960, without any definite cause, the patient had colic pain in the right upper quadrant of the abdomen accompanied by attacks of nausea and vomiting. Gall was seen in the vomitus occasionally. The pain, which radiated to the back, was of the severest intensity and did not disappear until a narcotic was used, under the suspicion of cholecystopathy. The same symptoms occurred two weeks later and the patient was forced to remain in bed. Her appetite began to diminish remarkably. On November 25, roentgenogram disclosed a duodenal diverticulum (fig. 1). After the third and fourth attacks of the same right epigastric pain and vomiting occurred, the patient entered the surgical ward on December 13, to undergo radical operation.

General Status on Admission. The patient was relatively ill nourished but not jaundiced. The temperature was 97 F. Nothing abnormal was found on the chest. The abdomen was generally flat and somewhat tender in the upper half, and pain radiating to the back was elicited on deep palpation in the right epigastric region, especially on the interclavicular line, although no mass was palpable. No enlarged liver or spleen was felt.

Clinical Examination. Examination revealed erythrocytes, 4,510,000; hemoglobin, 78 per cent, Sahli; leukocytes, 3950, sedimentation rate, 28 to 62 mm.; serum protein, 7.2 Gm./100 ml.; icteric index, 4, Meulengracht; urinalysis, normal; stool, positive for eggs of *Ascaris* and negative for occult blood; liver function, normal.

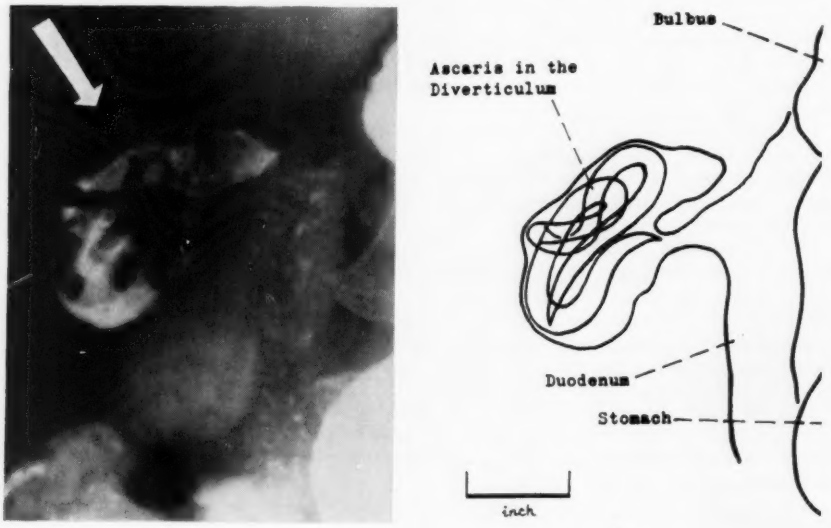
Roentgenological Examination. The gall bladder was almost normal as shown on the cholecystogram. Through gastrointestinal fluoroscopic examination, a diverticulum as large as a pigeon's egg was observed in the descending portion of the duodenum. It had a mushroom-like shape with a stem and there were no Kerkring's mucosal folds inside the sac. Barium in the diverticulum showed a lack of shadow coincident with the body of the *Ascaris* (fig. 2), instead of the homogenous thick shadow that had been observed before admission (fig. 1). Moreover, the worm body presented different contours at times, suggesting that the worm was alive (fig. 3).

With the tentative diagnosis of a duodenal diverticulitis, the patient was submitted to operation on December 19.

Operative Findings. Laparotomy was performed with Kehr's skin incision, under intratracheal nitrous oxide anesthesia. When the peritoneum was divided downward along the duodenum, the diverticulum

FIG. 1. Roentgenogram showing duodenal diverticulum (November 25).

arising on the lateral wall of the descending portion of the duodenum came into view at a point nearly 5 inches from the pyloric ring. The diverticulum was removed according to Gross's method[4] of radical operation for Meckel's diverticulum. At the time of operation, we could not find the *Ascaris* in the sac of the diverticulum, and any notable pathological change was not observed on other abdominal organs.



A *B*

FIG. 2. *A*, Roentgenogram showing the body of the *Ascaris*. *B*, Schematic diagram.

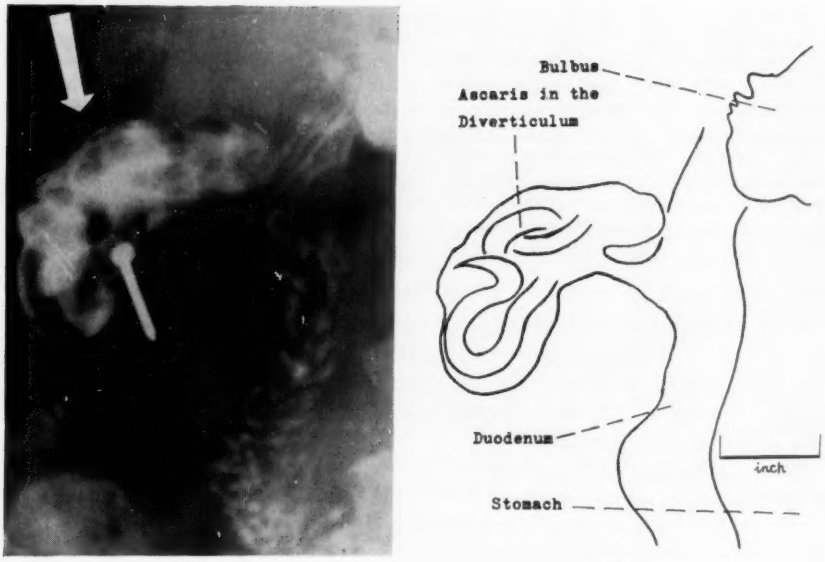


FIG. 3. *A*, Roentgenogram showing shift of the worm body. *B*, Schematic diagram.

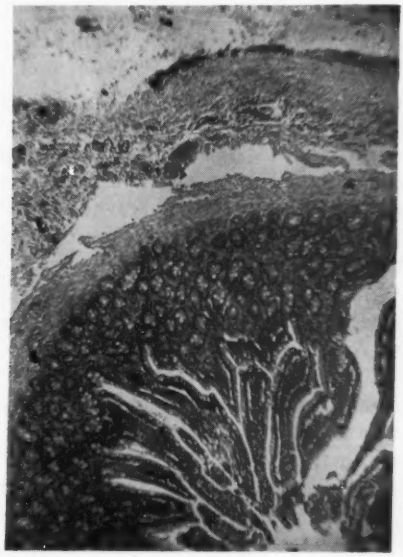


FIG. 4. Photomicrograph of the specimen.

Postoperative Convalescence. The wound healed well and the patient was discharged from the hospital 10 days after the operation. On the twenty-third postoperative day she suddenly complained of gnawing pain in the left half of the epigastrium, but not in the right half, which disappeared with the injection of the narcotic. Slight nausea and vomiting followed as well but the pain did not radiate in any direction. On the twenty-sixth, twenty-ninth, and thirty-second postoperative days a vermifuge was administered, expelling a 5.3-inch-long *Ascaris*. Since then the patient has not complained of any symptoms.

Removed Specimen. The sac was about 1.5 inches by 1 inch in size, with the neck about 0.4 inch both in length and in diameter at the orifice. Macroscopically there was no inflammation on the mucous membrane. Microscopically the layer of tunica muscularis was undoubtedly absent, from which evidence the diverticulum in this case was considered to be of the false type, and the tissue of subserosa was thickened partially, including enlarged blood vessels and hyaline masses (fig. 4).

DISCUSSION

Roentgenologically, the incidence of duodenal diverticulum is approximately 2 per cent, on an average, of all gastrointestinal series, although it ranges from less than 1 per cent up to 6.9 per cent, according to the literature.[5–15] The highest reported incidence is 5.2 per cent in American and European literatures[10] and 6.9 per cent in the Japanese literature.[15]

Statistically, the majority of duodenal diverticula are found on the medial aspect of the descending portion of the duodenal tract, especially in the region of the papilla of Vater,[16–19] because there is a locus minoris resistentiae chiefly on the side of mesentery, such as where blood vessels and nerves penetrate the muscularis, where the common duct and the pancreatic duct terminate, or where the pancreatic tissues are observed congenitally to penetrate the outer muscle layer. And a diverticulum that originates from the lateral wall of the descending portion, opposite the mesentery, as was found in our case, is rare.

The etiology of our case cannot be clarified sufficiently, but it is surmised from the histopathological study that for some cause the inflammation occurred in the subserous or muscular tissues, leaving the secondary locus minoris resistentiae, where the mucous and submucous tissues protruded due to the abnormally increased intraduodenal pressure to produce the diverticulum.[20]

The subjective symptoms, such as pain, nausea and vomiting, anorexia, constipation or diarrhea, jaundice and weakness, are considered to be the sequelae of either the retention or the infection in the duodenal diverticulum. In our case, it can be easily conceived that when the *Ascaris* strayed into the diverticulum the colic pain appeared with the attacks of nausea and vomiting at the right epigastrium in consequence of the extraordinary distention of the sac, while immediately after the worm moved out of it all the symptoms began to disappear. In fact, when the diverticulum contained the worm its shadow became about 2 or 3 times larger than when it did not (figs. 1, 2, 3).

Reviewing the literature, Robertson[21] classified the complications as follows: obstruction: obstruction of duodenum, obstruction of common bile duct, obstruction of pancreatic duct; diverticulitis: perforation, peridiverticulitis, duodenitis, cholangitis; content of calculi: enteroliths, gallstones; carcinoma. We wish to add "straying *Ascaris* in the diverticulum" as one of contents of the diverticulum as a result of clinical observation in our case. According to the literature, Takanashi[17] also reported a case of duodenal diverticulum in which the stool was positive

for *Ascaris* eggs although he did not confirm the presence of worms roentgenologically. In his case, symptoms were not so severe as to make operation necessary.

After treating and observing our patient with duodenal diverticulum and studying the literature, we definitely support the statement of Patterson and Bromberg[22] that they do not agree with those who so firmly advocate the clinical insignificance of duodenal diverticula.

SUMMARY

A case of duodenal diverticulum containing *Ascaris lumbricoides* in the sac, which had been subjected to operation with complete relief of complaints, was described.

Duodenal diverticulum or diverticula must be considered in patients showing symptoms similar to those of cholecystopathy. Roentgenological examination of the gastrointestinal tract is necessary when the diverticulum is doubtful.

Ascaris lumbricoides that has strayed into the diverticulum can be the cause of acute abdominal symptoms. Special care must be taken in the case of duodenal diverticulum or diverticula with *Ascaris* if the stool is found to contain *Ascaris* eggs.

Our case reported here is considered to be the first to present the shadow of *Ascaris* in the duodenal diverticulum on roentgenogram.

ACKNOWLEDGMENT

We express our thanks to Dr. Masuo Mori, Director of Kyuden Hospital, for his revision of this paper and to Dr. Félix Martí-Ibáñez, Professor of the History of Medicine, New York Medical College, and Publisher of *MD*, the medical newsmagazine, for his introduction of this paper to the *International Record of Medicine*.

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In Memoriam of Dr. Katsumi Kaida

A Great Physician, A Great Friend*

Félix Martí-Ibáñez, M.D.

PROFESSOR AND CHAIRMAN OF THE DEPARTMENT OF THE HISTORY OF MEDICINE,
NEW YORK MEDICAL COLLEGE, FLOWER AND FIFTH AVENUE HOSPITALS;
EDITOR-IN-CHIEF OF MD, THE MEDICAL NEWSMAGAZINE
NEW YORK, N. Y.

A Spanish poet once remarked how alone the dead are left, but I believe it is *we*, the living, who are left alone when a great man—and there is nothing greater than truly being a man—such as Dr. Katsumi Kaida departs from our midst.

It was on the enchanting afternoon of April 7th a year ago that I first met Katsumi Kaida. The airplane carrying me from Tokyo settled like a giant metallic gull at the Fukuoka airport. Still shimmering before my eyes was the splendrous image of Fujiyama, more a silver chalice than a mountain. Now, stepping out of the plane, I saw the airport stretching out like a golden carpet under the bright sun. The sky above was a delicate blue, as palely tinted as the shell of a sparrow's egg. A dark-headed man dressed in blue approached me. Lips smiling, eyes twinkling, his was an open face, with the forehead high and wide, as though it wanted to provide the birds of ideas with ample space to nest. As an old proverb has it, you do not make friends, you *meet* them; and so it was, on the eve of the anniversary of the birth of Buddha, when I first met Katsumi Kaida.

Our friendship had sprouted through letters, thanks to a written introduction from a great mutual friend, an outstanding physician, Dr. Seymour Farber of San Francisco, California. It was the kind intercession of this ambassador of culture and goodwill—a task to which he constantly applies himself, generously and skillfully—that first awakened Dr. Katsumi Kaida's interest in my professional endeavors. Later, on behalf of the Japanese Society for Tuberculosis, Dr. Kaida invited me to address as guest of honor the National Congress of Tuberculosis at Fukuoka.

From the very first, in Katsumi Kaida's letters, all in a warm, eloquent English, and in a hand as delicate and graceful as the contours of a cherry blossom, there shone through his kindness, generosity, tolerance, and friendliness, the sparkle of his clear intelligence, the fire of his all-embracing curiosity concerning men and world events, past and present. In our correspondence we discovered we had many things in common: we both liked the same cities in Europe; Vesalius was our most admired figure in the history of medicine; we both regarded our profession as medical anthropology, as the all-inclusive study of man, in sickness and in health, and his illnesses as "biographic episodes." Thus, through our thoughts committed to those fragile paper coffers that airmail envelopes are, across the vast American prairies and the towering Rockies, the blue and gray immensity of the Pacific, the cities

* The author is most grateful to Dr. Masuo Mori, Director of Kyuden Hospital, Kashii, Fukuoka, Japan, for his invitation to write this tribute that will appear in the Japanese medical journal *Kyudai-Ihō* in the memorial issue devoted to Dr. Katsumi Kaida.

and rice paddies of Japan, we forged a friendship that partook equally of spiritual affinity and professional kinship.

It was through this warm association, nurtured by no more than letters, mere slips of paper scribbled in ink, that I first came to know Dr. Katsumi Kaida, for they were the kind of letters into which sincere men pour the best of their mind and their being, and I recognized at once that I had come to know not just a friend, but a spiritual brother.

At the sessions of the 35th Japanese Society for Tuberculosis at Fukuoka, I had the opportunity to appreciate that Katsumi Kaida was one of those unique scientists who combine a great scientific intellect with a boundless humaneness. To his assembled colleagues from all parts of Japan he spoke brilliantly on scientific matters, yet out on the street I saw him tenderly pat a child's head as though it were one of those delicate little dolls from Hakata.

For Katsumi Kaida, the hallmark of the physician—indeed, of any man!—was humility, a quality he always carried about as a traveler carries his passport. He appreciated the fact that medicine, so noble as a profession, remains humble as a science.

Nothing concerning a physician is more revealing than the trajectory of his scientific thinking. In 1938 Dr. Kaida published an experimental study on the tuberculosis bacillus. In electing as basic theme for his work a disease that still heads the Japanese mortality figures, he was linking his scientific bent to his patriotic feelings. In 1941 he published his study on the early diagnosis and prognosis of pulmonary tuberculosis; in 1943 appeared his study on BCG vaccine; in 1949, his study on the problems of relapses in the adult tuberculous patient; in 1954, an evaluation of chemotherapy in tuberculosis and its prospects; in 1958 he published his study of the human constitution and its relation to tuberculosis, plus studies on the development and manifestations of tuberculosis and industry-linked tuberculosis. In these same 23 years there were produced more than 100 other works by him besides these.

If we look into the psychological meaning of these works, we can see that Dr. Kaida's scientific and humanitarian concern began with a study of the etiological agent involved in tuberculosis, then moved on to study early diagnosis, prophylaxis, then relapses and their prevention; he then studied and evaluated the future of the disease, ending up with the study of the "total" patient and the problems of statistics and public health. In other words, his restless mind, moving on from the specificity of laboratory microscopic views, soared like an eagle in flight to take in the entire panorama of public health in its efforts against the frightful white plague. Such is, in synthesis, the splendid development of the scientific thinking of a man, of his yearning to place his science and his conscience at the service of his country and of the health of his compatriots.

It is because of this, that on the day the heart of Katsumi Kaida stopped, countless lips began moving in prayer. He saved many lives and, when all is said and done, is this not the physician's greatest goal and glory? Are not the thanks of those still alive and who mourn for him still, those saved by his Samaritan endeavors, a far greater crown of glory than all the scientific honors paid him in his lifetime?

But more than this, Dr. Katsumi Kaida was a teacher who, with his profound words

and wisdom and, above all, with his warm, sincere personality, gathered about him, both in Japan and abroad—as at the International Conference on Medical Aspects of Air Pollution held in Vienna last year—the affection and admiration of all his colleagues.

Enchanting above all else were his humility—always an inseparable attribute of greatness—and his sense of humor, which would burst forth with the spontaneous, candid laughter of a child, joyously ringing through the air.

Added to these qualities was his dynamism. Katsumi Kaida lived in a hurry, as though life itself were a journey and every journey a lifetime. That is the way great men live—men who know that there is much in life to be done and that they must do it fast, so that they may do still more—for life is so short! Perhaps he himself had an unhappy foreboding of his untimely death.

But can one call short the life of a great, creative man, who saved many lives and eased many sufferings, who leaves many friends and pupils and an admirable family, who leaves his stamp on the world of medicine? I think not. It is rather that these meteor-like men pass through more quickly than the rest of us, simply because they do so much more and consequently do not require as much time in life.

Virgil says in the *Aeneid*: "*Manibus date lilia plenis.*" Give the lilies in handfuls. So we should bestow the lilies of remembrance, of love, and of gratitude upon Dr. Katsumi Kaida. His memory will live forever with those of us who had the honor of speaking, laughing, and living with him.

May his soul know the same peace and serenity that his presence afforded us, a serenity that can only be compared with the calm, peace, beauty, and inspiration of the marvelous sand and rock garden of Ryoanji in Kyoto.

Biography of Dr. Katsumi Kaida (1911-1961)

March 10,	1911—Date of birth.
March	1934—Graduated from Kyushu University, Medical School.
May 8,	1939—Appointed Assistant Professor of Kyushu University.
June	1939—Received degree "Igaku-Hakushi," which means Medical Doctor.
July 1,	1952—Appointed Professor of Kyushu University.
August 1,	1958—Appointed Director of Institute of Tuberculosis.
April 1,	1960—Appointed Director of Institute of Chest Diseases, Medical Department, Kyushu University.
January 17,	1961—Died.

The Epic of Medicine (X)

STARS AND GLOWWORMS*

(Medicine in the Enlightenment, 1700-1800)

Félix Martí-Ibáñez, M.D.

PROFESSOR AND CHAIRMAN OF THE DEPARTMENT OF THE HISTORY OF MEDICINE,
NEW YORK MEDICAL COLLEGE, FLOWER AND FIFTH AVENUE HOSPITALS;
EDITOR-IN-CHIEF OF MD, THE MEDICAL NEWSMAGAZINE
NEW YORK, N. Y.

On one side of the heaving quicksilver strip of channel that separated her from England, eighteenth-century France was, first, a turbulent stage for the epic drama of the Revolution and, later, the horizon over which the historic career of Napoleon rose like a blazing meteor only to fall in the end like a burnt-out rocket. While the lamps of the Enlightenment illumined the royal courts and later the people's courts in France, Cossack swords were carving out the growing might of Russia. The eighteenth century was, like the ninth century (the time of Charlemagne), a century eminently *European* and not merely a period in which isolated nationalities prevailed. The French monarchy tumbled, with the walls of the Bastille, in a blood bath in which a number of physicians played a part, among them Marat, the rabid revolutionary—"physician of the incurable" and director of *L'Ami du Peuple*, the newspaper of the Revolution—and Dr. Guillotin, who bequeathed to posterity the huge bloody scalpel of "mercy"—the *louisette* or guillotine—that he invented with his colleague Dr. Louis.

The eighteenth century was bathed in the light shed by the new ideas of the Enlightenment—the triumph of reason; philosophical optimism; the quest for complete happiness; the scientific spirit; philanthropy; satiric writing—formulated by the ruling classes and the courtiers in power. This ideology, herald of the French Revolution and Liberalism, slowly emerged during the critical years of the century, from 1721, when Montesquieu published his *Lettres Persanes*, to 1780, when, after thirty years of labor, the *Encyclopédie* was completed. It is impossible to appreciate the spirit of medicine in the Enlightenment without at least a glance into the depths of this French encyclopedia, where is reflected the image of the ideas that piloted its preparation.

Revolutionary in this Encyclopedia was the alphabetic classification for the first time in a *printed* work of what eighteenth-century man knew. Until then all knowledge had been entrusted to memory, with the consequent chaos. A dictionary of scientific and technological subjects, between whose lines, however, flitted a political purpose, the *Encyclopédie* took its philosophical inspiration from Cartesianism, the empiricism of the physician-philosopher Locke, Newton's ideas on physics, Vol-

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* This editorial originally appeared in *MD*, the medical newsmagazine, April, 1961. It is the tenth of a series of twelve editorials presenting a philosophical outline of the history of Medicine.

taire's rationalistic belief in knowledge, and Rousseau's enthusiasm for the sovereignty of the people. But its principal inspirational strength—which to a certain degree gives us the key to the philosophy of medical learning in this century—lay in Diderot's words: "*Hâtons-nous de rendre notre philosophie populaire*" (Let us hasten to bring our philosophy to the people.)

Because of this spirit, the true Encyclopedist was not a genuine investigator, since he thought he already knew practically everything, and his concern was rather to spread swiftly his knowledge among the people. The real creators of the science of the Enlightenment were not the active Encyclopedists but a minority of fertile minds who were concerned more with ferreting out the secrets of nature than with compiling dictionaries of their knowledge. But the *Encyclopédie* exerted a transcendental influence. As the enlightened despotism of the courts was replaced by the historic rise of a cultured *bourgeoisie* and popular sovereignty, knowledge became democratized. Greater concern with public health caused a fall in mortality and a rise in population, and the cultural level also rose, thanks to two new foci for debate, polemics, and the exchange of ideas—namely, scientific meetings in the academies and popular gatherings in the cafés.

A typical example of the influence of the *Encyclopédie* on medicine was the advance of surgery, since the *Encyclopédie's* accent on the manual and mechanical arts enhanced the social status of the surgeon. Another example was the growth of scientific interest in botany, cultivated by many physicians, which paralleled Rousseau's call for man to return to nature, and the renaming, during the French Revolution, of the months of the year with natural names such as might have come out of one of Vergil's *Eclogues*.

Enlightenment art reached an early peak in that perfumed, garden-girt marble coffer that housed the court at Versailles, symbol of autocratic power. There, Madame de Pompadour, as expert on the royal couch as she was at the diplomatic table, sponsored an art that, through the brilliant brush of Boucher, glorified the feminine domination of the period. Ceramics, hangings, tapestries, and furniture already showed that the violence of Baroque art was being tamed, leaving but a mere caged beast behind the golden bars of the Rococo.

Like her predecessor, Madame du Barry stimulated the Arcadian and voluptuous art of Fragonard, who, with Watteau and his *fêtes champêtres*, left us a naïve, fairy-tale vision of the courtly world of the period, a sensual world beneath whose silks and satins throbbed the feline cruelty of professional seducers, exemplified in the novel by Pierre Choderlos de Laclos, *Les Liaisons dangereuses*, which enacted in literature the same erotic marathon that Casanova, in the same century, ran in real life. The whole of this art finally succumbed to the impact of Diderot's rhapsodies on feeling and Rousseau's return to nature, and was replaced by the naturalistic art of Chardin and the stoic and virtuous classic art of David, the art dictator of France, who restored the dignity of the man-in-the-street and social morality, becoming the artistic herald of the French Revolution.

This Europe, where fresh ideas were fermenting like new wine, exported its Encyclopedist tenets to North America, where the champion of the new ideology was the worthy and talented printer, Benjamin Franklin. The Encyclopedist school

of thought was the great ideological trend behind the political forces that after the War of Independence gave birth to the United States.

Inspired by the concept of man as a rational animal endowed with the faculty to create and to attain, through intuition, reason, and experiment, a knowledge of the reality of nature, great systems of medical philosophy and speculative doctrines sprang up. Within this framework the physician developed his new concept of disease.

The faith of d'Alembert and Voltaire in reason, the faith of Rousseau and Diderot in feeling and sensation, and the faith of Buffon in the observation of nature, inspired fresh medical achievements. While in politics the two great characteristics of the age were enlightened despotism as a means of government for a nation and balance of power as a measure of international coexistence in Europe, in medicine, along with the philosophical "despotism" of a few great isolated physicians, there prevailed a conceptual balance between the various systems and doctrines of the age, which encouraged stabilization in medical thought. In this eighteenth-century world, the sky glittered with both dazzling stars and mere glowworms.

The natural sciences—biology with Linnaeus, astronomy with Laplace—advanced under the impulsion of the new ideas. Physics adopted the rational mechanics of Euler and Watt. A new wondrous physical force called electricity, which had one day convulsed the frogs' legs that Galvani was preparing for his wife Lucia, revolutionized the world as well as the literature and poetry of the age. Poets and writers spoke of "electrifying" ideas, of the "spark" and "current" of love. A group of talented chemists, including Priestley and Scheele, the discoverers of oxygen, and Lavoisier (Lavoisier, who discovered the similarity between combustion and hematosis yet whose head rolled at the foot of the guillotine because, as they said, "The Revolution has no need for savants!"), initiated modern chemistry.

One of the most famous medical systems then current was *animism*, created by two friends who later became irreconcilable enemies: the brilliant, magnetic Friedrich Hoffmann, who revived the Methodism of Themison, distinguished himself in medical chemistry, and held that the force of the vital principle, or ether, was transmitted through the nerves to the organic "fibers," any disturbance in which caused "atony" or "hypertonia"; and the surly, taciturn George Stahl, an adherent of expectant therapy, whose animism, a Christian version of the Hippocratic system, made him the herald of vitalism.

The second system, *vitalism*, which maintained that life was a property of living matter, reached its peak with Théophile de Bordeu, pioneer in endocrinology, Barthez, and Philippe Pinel (who perhaps should be acclaimed more as a classifier of diseases than as a psychiatrist), and was resurrected later by Bichat and Laënnec. Its exponent in Scotland was William Cullen, whose "neuropathology" claimed that the nervous "tone" of the solid parts was the supreme property of life, disease being caused by changes of this into "spasm" or "atony." He formulated the concept of lesion of sensitivity and movement without inflammation of the organs (equivalent to our current concept of neurosis). This system was opposed by the Scotsman, John Brown, a roistering cleric, who held that life depended upon excitability, which mobilized organic energy, and disease was caused by excessive or de-

ficient—sthenias and asthenias—excitability and should be treated by the drastic *contraria contrariis*. It has been said that the Brunonian system destroyed more lives than the French Revolution itself. The National Convention of the Revolution approved this Brunonian system, which was to be modified in Germany by Reid and by Goethe's physician, Hufeland.

Above all these speculative systems towered the great figure of Herman Boerhaave, the "Batavian Hippocrates," who in a twelve-bed hospital taught medicine to half the physicians of Europe. Boerhaave originated bedside instruction and the comparative study of clinical case histories, diagnosis, and autopsy. He was so beloved by his fellow countrymen that on one occasion, when he recovered from a severe attack of gout, bells were rung and the whole city of Leiden was lit up with torches.

The utilitarian "mechanical" spirit of the age spurred progress in comparative, topographical, and surgical anatomy, which advanced from Fallopius' "texture" to Bichat's "tissue." Outstanding was the *anatomia animata* of Morgagni, who, in his five-volume magnum opus, published in his eighties and containing seventy letters to a young friend (medical knowledge in those days was diffused by letters in default of periodicals), left a veritable gallery of the dead, a collection of autopsies of princesses, prostitutes, bishops, and bandits. Morgagni showed that every disease had its seat in *a particular organ*, and his dynamic pathology contrasted sharply with the still prevalent static anatomy. Other leading lights in this field were the Monros, Gimbernat, Scarpa, and Winslow.

Physiology advanced with the Swiss titan Albrecht von Haller, poet and polyglot, who left 2000 articles, 14,000 letters (despite his Catholicism, he corresponded with atheists like Voltaire and libertines like Casanova), and a mountain of papers on medicine, religion, philosophy, and botany. He held that irritability was a property of the muscles; sensibility, a quality of the nerves; and life, a specific property of living matter.

Other shining lights in physiology were the Abbé Lazzaro Spallanzani, who, with cloth bags and perforated tubes filled with food that he made his patients swallow, proved that digestion was not simply putrefaction; and the Reverend Stephen Hales, who studied arterial pressure by introducing glass tubes into the arteries of horses. Embryology—physiology in time—advanced when its modern founder, Kaspar Friedrich Wolff, demonstrated that the organs are not preformed but *progressively* differentiated, which earned him scientific ostracism and led him to voluntary exile in Russia under the generous protection of Catherine the Great.

The heritage of Leiden passed to the Old Vienna school, founded by Gerard van Swieten and continued by Anton de Haen, to the Edinburgh and English schools. In music-loving Vienna, Leopold Auenbrugger, musician and physician, copying his father, a vintner whom he saw tap his wine casks to gauge their contents, tapped his patients' chest to listen to their sounds. This discovery, unrecognized in Auenbrugger's lifetime, was reintroduced and championed in France by Napoleon's physician, Corvisart, who—despite his rejection by the Necker Hospital for refusing to wear a wig *de rigueur*—eventually became director of La Charité. Auenbrugger's discovery, a "musicalization" of the sounds of human diseases, reflected the sensualism of some of the Encyclopedists and the musical atmosphere of Vienna.

Specialties made progress, particularly pediatrics, spurred by the interest in children aroused by the writings of Rousseau and Pestalozzi. Public health advanced with Johann Peter Frank, advisor to emperors, whose idea of a "health police" to protect the people's health (it even supervised the closing time of dance halls) made him the father of modern social hygiene. In psychiatry, Pinel freed mental patients at the Salpêtrière from their fetters, championed the rights of the mentally ill at the National Assembly, and made diagnosis an "exact" science based on a Linnaean type of classification of diseases.

The leading lights in England were Mead, Huxham, Pitcairn, and various other nosographers, while Scotland shone with the Monros, Bell, the Hunter brothers (world leaders in surgery), and Cullen. Heberden during this period wrote his classic account of angina pectoris, and Withering rifled an old wives' rustic folklore for the secret of the foxglove (digitalis) in treating dropsy.

Therapy was traditional, with a fashion for clysters administered beneath the skirt to the beautiful court favorites in the royal boxes during plays and concerts. Phlebotomy degenerated into blood-sucking vampirism, while surgery progressed with the separation of surgeons from barbers.

While the heavens of the Enlightenment Age glittered with the dazzling stars of medicine, on earth glowworms too gleamed. The Viennese Franz Anton Mesmer, inventor of mesmerism, clad in a purple robe and surrounded by foppish assistants (soon to be beheaded in the Revolution), mobilized the "magnetic fluid of the universe" onto his hysterical female clients with a magic wand and to the accompaniment of sweet music. The German Samuel Hahnemann held that diseases were of "natural classes" and treated them with drugs, in infinitesimally small doses, that caused mild forms of similar diseases, thus inventing homeopathy. Quacks and charlatans flourished, such as the fabulous Venetian Giacomo Casanova, Cagliostro, the Comte de St. Germain, and the Scotsman James Graham, whose Temple of Health featured an electrified "celestial bed" for the connubial use of love-bitten couples.

The atrocious epidemics that scourged Europe—smallpox alone killed sixty million people—compelled fashionable ladies to insert in their powdered wigs sponges soaked in honey and vinegar to attract and confine lice. And then, on a memorable day for medicine, a country doctor, Edward Jenner, whose blue topcoat and silver spurs were well known to the local villagers, inoculated pus from a dairymaid with cowpox into a small boy, who later successfully withstood a smallpox inoculation. Thus Jenner's merciful vaccination replaced variolization.

The discovery of vaccination led to a glorious page in the history of medicine, when the Spaniard Francisco Javier de Balmis journeyed around the world with twenty-two children, in whose arms he kept the vaccine alive by passing it from one to the other, and vaccinated hundreds of thousands of people around the globe. Balmis was assisted in South America by his heroic colleague and martyr to medicine, Francisco Salvany, who lost a hand and an eye and finally died of tuberculosis in Bolivia, a victim to this epic campaign. Facing terrible dangers, the antagonism of his fellow men, and a hostile nature, Balmis took the children carrying the vaccine to the Caribbean, Mexico, the Philippines, Canton, and Macao, thus making the

first and only tour around the world accomplished by a physician on a heroic errand of mercy.

In the United States, life in the colonies was settling down. Physicians traveled to England and Holland to study. Great medical figures (Cadwalader, Shippen, Morgan, Benjamin Rush) shone brilliantly at the same time that Benjamin Franklin promoted the ideas of the French Encyclopedists, which, a quarter of a century after Rousseau had expounded them in his *Social Contract*, were finally incorporated into the United States Constitution. Then began the memorable westward trek across the vast, green prairies, where the Sioux and the buffalo reigned, opening up new horizons to American medicine, then still struggling with the problems imposed by its historical youth.

But even before the eighteenth century came to a close, the bells of history were already tolling the knell of Enlightenment Encyclopedism in Europe. The romantic seed scattered by Rousseau was germinating, while in another direction naturalism was flowering with renewed impetus. By the end of that century, Germany was already on the road to romanticism, whose philosophical idealism was to guide the first half of the nineteenth century, just as the second half was to be dominated by the positivism and naturalism of France and England. But in the first hour of the new dawn, there still lingered the light shed by the ideas of the sun-men of the Age of Enlightenment, a strong brilliant light that made the light of the glow-worms fade.

Fourth Series of Post-Graduate Courses for Specialists

The Fourth Series of Post-Graduate Courses for Specialists in Ophthalmology will be given from Sept. 14–Nov. 15, 1961. The Courses will include the following: Advances in Ocular Prostheses; Anomalies of Extraocular Muscles, Including Ptosis; Biomicroscopy; Biomicroscopy, Using Near Ultra-Violet, Cobalt Blue, Polarized Light, and Infra-Red Lights; Clinical Bacteriology; Clinical Problems of Tear Formation; Complications of Ophthalmologic Surgery; Contact Lenses; Electrophysiology and Applied Physiology of the Eye; Enucleation and Evisceration; Glaucoma; Gonioscopy; Keratectomies and Keratoplasties; Lacrimal Sac Surgery; Light Coagulation (Meyer-Schwickerath Apparatus); Low Vision Aids; Ocular Biochemistry; Ocular Geriatrics; Ocular Neuro-Ophthalmology; Ocular Photography; Ocular Radiology; Ocular Therapeutics; Ophthalmoscopy; Orthoptics; Pathology; Pediatric Ophthalmology; Perimetry; Physiological Optics; Plastic Eye Surgery; Pleoptics and Macular Function Testing; Psychosomatic Factors in Ophthalmology; Radio-Isotopes in Ophthalmology; Recent Advances in Cataract Surgery; Refraction; Retinal Detachment; Surgery of the Orbit; Tonography; and Uveitis.

For catalogue and additional information, please write to: Mrs. Tamar Weber, Registrar, Institute of Ophthalmology of the Americas, New York Eye and Ear Infirmary, 218 Second Avenue, New York 3, New York.

Félix Martí-Ibáñez Resigns as Editor of International Record of Medicine

Dr. Félix Martí-Ibáñez has announced his resignation as Editor-in-Chief of the *International Record of Medicine* in order to devote himself entirely to his medico-historical and literary writings and to other new international book and magazine publishing plans, especially to the medical newsmagazines *MD* and *MD of Canada* of which he is Editor-in-Chief.

The *International Record of Medicine*, of which Dr. Martí-Ibáñez has been Editor since 1950, was recently given as a gift by MD Publications, Inc., to Columbia University and is now being published by Hermes Press, Inc.

Born in Cartagena, Spain, Dr. Martí-Ibáñez studied at the Medical School of the University of Barcelona and received his Doctorate in Medicine from the Medical School of the University of Madrid. He then practiced psychiatry in Barcelona and lectured throughout Spain on psychology, medical history, art, and literature. During this period, he also edited several medical and literary journals and wrote two novels as well as several books on the history of medicine and psychology.

In 1937 Dr. Martí-Ibáñez was appointed General Director of Public Health and Social Services of Catalonia, and later, Under-Secretary of Public Health and Social Services for Spain.

After his arrival in the United States in 1939, Dr. Martí-Ibáñez held positions as Medical Director with three leading pharmaceutical concerns.

In 1950 he undertook the publication of several medical journals, and he founded the publishing house of MD Publications, Inc. The medical newsmagazine, *MD*, of which he is the Editor-in-Chief and publisher, was created and launched by him in January, 1957.

In 1956 the New York Medical College, Flower and Fifth Avenue Hospitals appointed Dr. Martí-Ibáñez Professor and Chairman of the Department of the History of Medicine.

Dr. Martí-Ibáñez is the author of the section on the History of Medicine in the latest edition of the *Encyclopedia Americana*.

Dr. Martí-Ibáñez is now writing a tetralogy of the history of medicine. The first two books in this series, *Centaur: Essays on the History of Medical Ideas* and *Men, Molds, and History*, were published in 1958. *A Prelude to Medical History* will be published this spring; *The Fabric of Medicine* is forthcoming. He has also completed a book about his journey around the world called *Journey Around Myself* and two books of short stories. He is also working on a historical novel about the times of Vesalius.

Jewish Medical Ethics: A Comparative and Historical Study of the Jewish Religious Attitude to Medicine and Its Practice. RABBI DR. IMMANUEL JAKOBOVITS. New York, Philosophical Library, 1959. Pp. 381. Price $6.00.

Thoroughly researched and profusely annotated, this excellent treatise is a unique contribution to the history of Jewish medical ethics. The author, formerly Chief Rabbi of Ireland and at present rabbi of a New York City congregation, discusses the development throughout history of Jewish views on numerous medicosocial subjects, including eugenics, sterilization, abortion, euthanasia, anatomical dissection.

The status of the physician, according to Jewish law, is reviewed, the author pointing out the high regard for the physician and the special religious concessions he merits. Particularly interesting is an appendix on artificial insemination, which illustrates how the authority and precedent of ancient Jewish law are applied in handling new circumstances.

The book should be of interest to both physicians and theologians as an unusual, informative treatment of a subject not too well understood outside of theological circles.

Child Development: Physical and Psychologic Growth Through Adolescence. Ed. 4. MARIAN E. BRECKENRIDGE, M.S., AND E. LEE VINCENT, PH.D. Philadelphia and London, W. B. Saunders Company, 1960. Pp. 648.

This is the fourth edition of a valuable college textbook on physical and psychological development of the child. Included are chapters on physical, emotional, and other influences on growth, development of the body, of sense perceptions, memory, language skills, and personality. The student is encouraged to make his own observations on child development by use of case study suggestions.

The Torch. WILDER PENFIELD. Boston, Little Brown & Co., 1960. Pp. 370. Price $4.75.

The tradition of distinguished literary writing among physicians is an old and noble one, from Rabelais to Somerset Maugham. The physician, moved by the urge to express himself in a medium more flexible and varied than the scalpel, the laboratory, or clinical diagnosis, has often turned to writing.

A world-famous neurosurgeon and neuropathologist, Dr. Wilder Penfield, of Montreal, has written a brilliant medico-historical novel, his second (the first, *No Other Gods*). As a man who thrives on facing and overcoming difficult, almost im-

possible, tasks, he selected the island of Cos, the fifth century B.C., and the figure of Hippocrates, as the space, the time, and the hero for this great and unusual historical novel.

This era was what Karl Jaspers called a "time-axis" period, one of the greatest and most active history-making periods in the evolution of mankind and also one of the most difficult to reconstruct today because of the lack of existing material about it. But Dr. Penfield, it seems, plunged as determinedly and daringly into this difficult novel as an Olympic swimmer plunges from a high diving board, devoting all his spare time for six years to it and doing personal research at Cos, Cnidus, and Triopion, in the admirable effort to relive things the way they were in the times of Hippocrates.

We do not know of any other historical novelist, including the most famous ones, who would go to such trouble to authenticate the locale of his novels. But then Dr. Penfield is not only a scholar and writer; he is also a physician and a humanist in the best Renaissance tradition.

We shall leave the reader the pleasure of wandering by himself through the interesting literary maze of events that came about when Hippocrates treated the fascinating Penelope, daughter of Timon, First Achon of Cos, for the "Sacred Disease." All the other characters are equally fascinating, Empedocles the Great, Sosander, brother of Hippocrates, Olympias, wife of Timon, and the temptress Thargelia, to name only a few, and their daily life emerges from the pages of this book as real and authentic as that of world leaders we read about in newspapers today. Above all, the figure of Hippocrates stands out as a good, kind man, of great intuition, to be admired and revered by physicians of all times as one who lit an immortal humanitarian torch.

At the end of the novel there are 27 pages of "notes," as fascinating as the novel itself, concerning the literary, historical, and archeological background of this work. We hope that Dr. Penfield will some day enlarge on them and write a book about how and where and when this fascinating novel was researched by himself and written. These are the "footnotes to history," as Robert Louis Stevenson would have called them, which sometimes are more important than history itself.—*Félix Martí-Ibáñez, M.D.*

Medicine Makers of Kalamazoo. LEONARD ENGEL. New York, McGraw-Hill Book Company, Inc., 1961. Pp. 261. Price $4.50.

This fascinating book is a deserved tribute not only to the Upjohn Company of Kalamazoo, Michigan, but to the entire pharmaceutical industry. Through the notable record of growth and achievement of these distinguished laboratories, the reader is introduced to the impressive accomplishments and contributions of pharmaceutical research in our century paralleling and complementing the work of the medical profession itself.

Upjohn's development symbolizes that of the pharmaceutical industry. The company began in 1885 as the Upjohn Pill and Granule Company for the manufacture

of a new invention, the friable pill. The company's next profitable products were Phenolax and Citrocarbonate, the success of which made possible research into and development of vitamin preparations. Later developments included heparin, Gelfoam, hormonal products, then Albamycin, Medrol, and, most recently, Orinase. Thus the rewards on each new discovery have led them to expand their research in wider areas and to the continued growth of Upjohn throughout the years.

The company has remained essentially a family enterprise since its founding by the colorful and enterprising Dr. William Erastus Upjohn. The author portrays Upjohn sympathetically yet accurately—a journalistic approach that is also skillfully applied in describing the company itself. The author had the scientific cooperation of Upjohn officials in writing this book.

The saga of the medicine-makers of Kalamazoo manages to hold the reader's attention all the way, a major accomplishment since company histories are often quite dull to anyone but the management.

The author, Leonard Engel, is a well-known scientific writer and journalist, who has been awarded the Blakeslee Award of the American Heart Association.

Avicenna and the Visionary Recital. Prof. Henry Corbin. New York, Pantheon Books, Inc., 1960. Pp. 423. Price $7.50.

Just as the shadow of a mountain grows bigger with the passage of the sun from east to west, so does the shadow of Avicenna, the great philosopher of the ancient Persian world, grow ever bigger with the passage of the centuries. Avicenna's life reached across two critical centuries, the ninth and the tenth, and for nearly one thousand years his words have been both light and wisdom to the Arabic world.

In 1954, on the occasion of the millenary of Avicenna, Prof. Henry Corbin was the guest of the Iranian National Monuments Society in Istanbul. In a happy hour dedicated to the cause of Islamic studies at an Istanbul library, Prof. Corbin stumbled on the manuscript of the Persian translation of and commentary on *Hayy ibn Yaqẓān*, originally written in Arabic by the Prince of Arabic physicians, as Avicenna was called. The fruit of Prof. Corbin's discovery is the present book, a panoramic study of the mystic psychology of Ibn Sina (Avicenna), a prolific writer (more than a hundred books on medicine, philosophy, logic, theology) whose *Canon* has been the most widely read book in medical history.

Avicenna and the Visionary Recital is a great adventure in cosmology, a cycle of three of Avicenna's "recitals," "Recital of Hayy ibn Yaqzān," "Recital of the Bird," and "Recital of Salāmān and Absal," analyzing their philosophical symbolism, the *Imago mundi* of Avicenna, and his mystical adventure in showing the adept the spiritual path to his own self and to a better understanding of the cosmos.

An admirable example of singular scholarship, this book is not easy to read, requiring intense concentration and great knowledge on the subject if one is to grasp its full value. But great value it has, for it throws new light on one of the greatest minds in the history of medicine, and on Oriental mysticism.—*Félix Martí-Ibáñez, M.D.*

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